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Joseph Hyde Pratt

Creatinemia and Congenital Kidney
S. Joseph Pearlman

Principles of Medical Renal Disease
D. A. J. Morey

New Year Greetings
President Frederick K. Herpel

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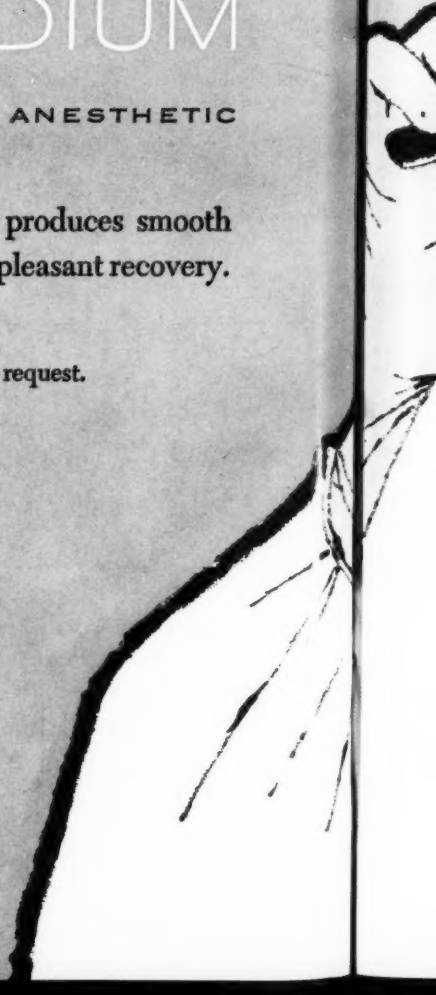

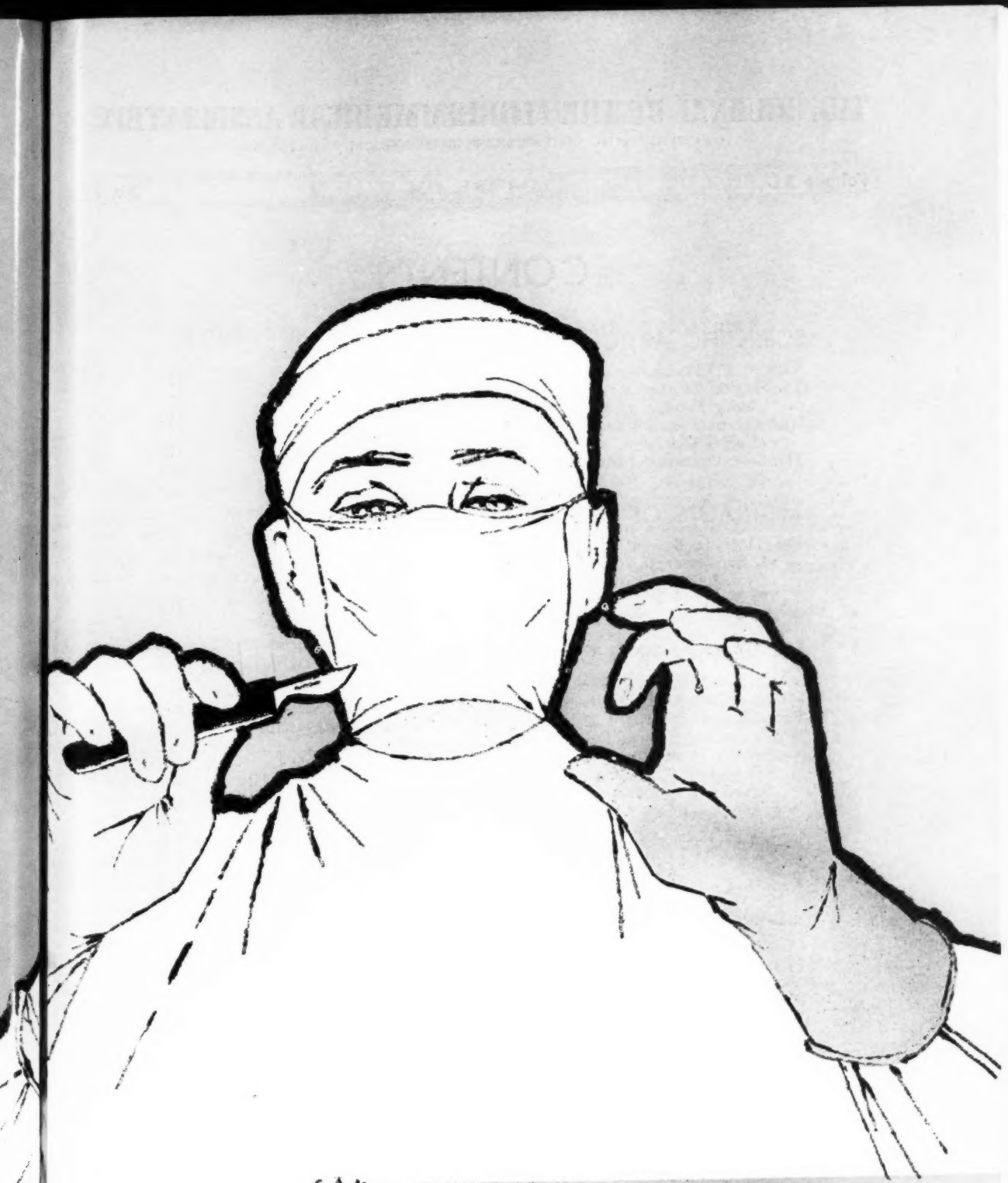

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Southern Florida and the Cardiac Patient

SIDNEY DAVIDSON, M.D.
LAKE WORTH

From the time of the Romans, it has been recognized that the more benign climate of the South had much to offer the sick. In the Old World, long before the discovery of the New World, it was the practice of those who could to spend as much of the winter as possible in Southern Europe. The sunny shores of the Mediterranean have long been used as a haven for the chronically ill of Europe who could escape the more inhospitable climate of the northern and central part of the continent.

In the New World, the first of whom there is record who sought alleviation of his bodily ailments by changing climate was of course the sixteenth century Spanish explorer Ponce de Leon. Although he did not find his fabulous fountain of youth in Florida, he did discover a land whose mild subtropical climate has become a haven for the chronically ill.

With the recent increase in life span and the almost complete elimination in this country of all major causes of death except vascular disease, cancer and accident, an increasingly familiar aspect of the American scene has been the annual pilgrimage to Florida of patients with cardiac disease. In view of the usual benefit derived from this pilgrimage, one must conclude that, in one sense at least, these patients have found that fabulous fountain whose absence so disappointed Ponce de Leon.

Although the majority of the vascular victims who seek health in this more temporate clime are patients with arteriosclerotic and hypertensive cardiac disease, those with rheumatic and congenital cardiac disease have come along to Florida looking for help to this more kindly climate.

Read before the Florida Medical Association, Seventy-Ninth Annual Meeting, Hollywood, April 29, 1953.

The patient with rheumatic cardiac disease who comes to Southern Florida comes either to alleviate the distress of his advanced vascular damage or to live in a place where the danger of a potentially damaging flare-up of the active rheumatic state would be minimized. He has ample basis in clinical and experimental observation for his confidence in the ability of the Florida climate to help.

White[1] stated: "Climate appears to be an important factor in the incidence both of rheumatic infection and the rheumatic type of heart disease. In the northern part of the United States the rheumatic infection and its permanent involvement of the heart are five times more frequent than in the southernmost part of the country." Various comparative surveys have shown that the incidence of rheumatic heart disease in Southern California[2] and Arizona[3] is much lower than in colder areas such as Connecticut[3] and Wyoming.[4]

Careful studies by Saslaw, Ross and Dobrin[5] on the incidence of rheumatic fever in native school children in Dade County, Florida, have shown that the incidence there is much lower than in the rest of the country except in Southern Arizona and Redlands, Calif. Further studies by Saslaw, Ross and Hernandez[6] have shown that the incidence of rheumatic heart disease in out-of-state school children in Dade County is much greater than in the native children. This is undoubtedly due to the migration of children with rheumatic cardiac disease to this area.

The low incidence of rheumatic fever and rheumatic heart disease in the native children in Dade County (and I am sure that there is this low incidence also in the remainder of South Florida) is undoubtedly due to the comparatively

low incidence of infections of the upper part of the respiratory tract, especially those associated with the streptococcus. The mildness of the climate allows much more time to be spent out-of-doors than in the Northern climates. This distinction is especially true in the winter months. This leads to less crowding indoors and less spread of those infections of the upper portion of the respiratory tract which do exist. Physicians are all familiar with the way crowding increases the incidence of rheumatic fever, and they know how, all too often, it occurs in too many members of the same family.

Although the studies mentioned have shown that there is no influx of persons with congenital cardiac disease like that of those with rheumatic cardiac disease, there is no doubt that the relative mildness of the climate and the lower incidence of infections of the upper part of the respiratory tract make the lot of those with congenital cardiac disease in Southern Florida a less onerous one. The possibilities of a bacterial endocarditis engrafting itself on a congenitally malformed valve are less in the mild climate. The lessened metabolic requirements of the warmer climate undoubtedly diminish the burden of the congenitally handicapped heart which has difficulty maintaining its compensation.

Although patients with rheumatic and congenital cardiac disease benefit greatly from the mild climate of Southern Florida, it is those with hypertensive and arteriosclerotic cardiac disease who provide the greatest number of vascular victims who seek help there. These sufferers benefit from the climate in many ways. For one thing, they are less susceptible to infections of the upper part of the respiratory tract and to pulmonary infections. These infections, in a more inhospitable environment, too often are the precipitating cause of cardiac failure in a patient who has just been getting by.

In colder environments, there is a constant stimulation to the thermal regulatory centers with consequent metabolic stimulation. Along with this stimulation, there are vascular constriction and increased production of the adrenal steroids with their known deleterious effect on the vascular system.

The angiospasm resulting from cold is, of course, a well known phenomenon. Its effect on the patient with angina pectoris is, too often, markedly to increase the incidence of his anginal episodes to the extent that many such sufferers are forced to spend all of their winters indoors. Such people always benefit greatly from the milder climate in South Florida during the winters.

The patient with peripheral vascular disease also benefits a great deal from the milder climate. It has been strikingly evident to me, as it undoubtedly has been to many physicians here, that although many of my patients have moderately severe to severe impairment of the peripheral circulation, their complaints are surprisingly few. Many of these patients suffered considerably because of the impairment of the peripheral circulation before coming to Florida, and there is no doubt that the lack of stimuli to angiospasm with its accompanying disability is due to the milder weather.

Despite the undoubted benefit derived by patients with arteriosclerotic and hypertensive cardiac disease who flee from the colder weather of the North to the more moderate climate, no study has been made of these patients comparable to the one made of those suffering from rheumatic fever. Surprisingly enough, the one that demonstrates best the effectiveness of warm weather in reducing mortality in heart disease is the work of Brown and Pearson.[7] They analyzed the relationship between mortality due to heart disease and the mean temperatures during the various times of the year in New York City. They used mortality statistics for all types of heart disease for a period of 10 years from 1934 to 1944, and the mortality due to coronary artery disease for five years from 1940 to 1944.

These investigators found that there was an 18.8 per cent increase in the deaths due to heart disease in the colder months, as compared to the warmer months. They were able to show that the average month's temperature deviation from the yearly average varied inversely with the deaths due to all forms of heart disease and also to coronary artery disease (fig. 1).

Although the complaint is often made that it is not the heat, it is the humidity, similar studies on the relationship of deaths due to heart disease and the humidity bore no direct relationship to the variations in death rates, and specifically those due to coronary artery disease.

Even though similar studies are not available for Southern Florida, comparison of the temperatures at the West Palm Beach Weather Station with those in New York shows that the daily temperature maxima, minima and means in New

York City during the months of June, July, August and September were of the same order of magnitude as those reported for the West Palm Beach Weather Station during the months of November, December, January, February, March and April. May and October, although somewhat warmer, are not appreciably so, since the averages are only 3 to 4 degrees higher in those months than at the peak of the New York summer in July when, according to the mortality statistics, the deaths due to heart disease are minimal.

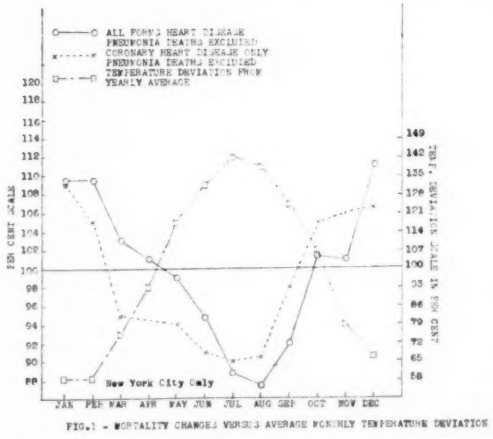
ALL FORMS HEART DISEASE
PNEUMONIA DEATHS EXCLUDED
CORONARY HEART DISEASE ONLY
PNEUMONIA DEATHS EXCLUDED
TEMPERATURE DEVIATION FROM
YEARLY AVERAGE
PER CENT SCALE
DEVIATION IN DEGREES FROM
New York City Only
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

FIG. 1 - MORTALITY CHANGES VERSUS AVERAGE WEEKLY TEMPERATURE DEVIATION

Courtesy, Brown, H. R., Jr., and Pearson, R.: Seasonal Variations in Heart and Coronary Disease as Related to Various Environmental Factors, Am. Heart J. 35:763-768 (May) 1948.

Studies in this area similar to those made in New York are not practical for several obvious reasons. The population varies a great deal between summer and winter, and mortality statistics, using the so-called fixed population as a basis, would be inaccurate. In addition, the large numbers of people with known heart disease who come to this area for mild winters, and who die here despite the beneficence of the climate, would also affect statistics so that results could be neither conclusive nor accurate. It is for these reasons that as yet a similar study has not been attempted. Comparing the cardiovascular death rates in states with more stable populations, however, one finds that the rate in New Hampshire is 644.7 per 100,000, compared to that of New Mexico with 231.3 per 100,000.

A discussion such as this would be incomplete without mentioning some of the work done by Burch[8] on the effect of a subtropical climate on congestive heart failure. His studies were made under conditions of controlled temperature and humidity. His patients with cardiac disease were most comfortable and did best at temperatures from 68.0 to 72 F., averaging 70.3 F., with humidity ranging from 48 to 72, average 60.2. When he subjected these patients to temperatures ranging from 99.0 to 108.3 F., with an average of 104.3 F., they were extremely uncomfortable and, at times, acute congestive failure was induced. In comparing the temperature ranges in his experiments with those reported from the West Palm Beach Weather Station, one finds that the temperatures he reported as optimum for comfort, namely from 68 to 72 F., are of the same order of magnitude as the mean temperatures for the months of November through April, since these were 68 to 74.1 F. The relative humidities reported during these months, taken at 1:30 p.m., are close to those reported by this author as being most comfortable.

The temperatures which proved so deleterious, that is, temperatures ranging from 99 to 106 F. with a mean of 104.3 F., are considerably higher than those experienced in this area, since the average maxima in the hottest months, July and August, never go above 92 and the means never above 83. Since the title of his paper is "The Influence of Environmental Temperature and Relative Humidity on the Rate of Water Loss Through the Skin in Congestive Heart Failure in a Subtropical Climate," in using temperatures between 99 and 108 F. Dr. Burch must have been using his home city of New Orleans as a model. He could not have meant Florida.

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Discussion

DR. H. MILTON ROGERS, St. Petersburg: I greatly enjoyed Dr. Davidson's paper. I am a little reluctant to go as far as he has in regard to climate in heart disease because it is difficult to assess the relative merits of climate, infection and even emotional factors in any individual case or series of cases. I particularly recall one patient with myocardial infarction whom I attended in 1940 during his final illness. He had been told in 1920 that if he would go to a certain area in Germany, Bad Nauheim, take the baths and benefit by the climate there, he would not die of heart disease. He made the trip faithfully every year until 1939 and even then, in spite of the fact that he was caught in the war and brought back by ambulance, he was able to make the trip. He died the next year, and his wife still thinks that his death was due to the fact that he did not make the trip to Bad Nauheim in 1940.

In respect to congenital heart disease, every one is familiar with the frequency of bacterial endocarditis. People are less familiar, however, with the syndrome of congenital heart disease and cerebral abscess, which may occur in the absence of bacterial endocarditis, when infection extends directly from the extremities or from the nose or throat to the brain without going through the lungs. The route is directly through a septal defect or through a two-chambered or a three-chambered heart. Then also in congenital heart disease, masquerading as infection are the frequent episodes of heart failure which one sees in children with patent ductus arteriosus, with coarctation of the aorta proximal to the ductus, in cor triloculare and in other anomalies of the heart in which they are considered to have frequent bouts of infection which are in reality bouts of left ventricular failure. So I think this is one factor which makes it difficult to evaluate the role of infection in congenital heart disease.

The subject of rheumatic heart disease will be discussed in more detail by Dr. Saslaw.

I think the most important aid that Florida has to offer the person with heart disease is in arteriosclerotic heart disease and coronary artery disease with angina pectoris. A warmer climate is of definite benefit in persons with recurring angina, but even then the role of emotion, the fact that these patients are away from their business worries, also is important and must be considered along with the climate.

DR. MILTON S. SASLAW, Miami: As Dr. Rogers has mentioned, I will confine my remarks to rheumatic fever and rheumatic heart disease. I think that Dr. Davidson's paper would have created quite a furor had it been given in Boston or New York or Chicago. We here in Florida accept much of what he has said placidly. The fact remains, however, that in rheumatic fever and rheumatic heart disease statistics bear out the benefits that can be obtained, particularly from being born in this area. I might add, too, that recent studies by Graybiel and his group of co-workers in Pensacola have indicated that not only is South Florida of benefit to the patient with rheumatic cardiac disease, but so also are North Florida and West Florida. So from whatever part of the state one may come, he is in one of the best places in the country for the patient with rheumatic cardiac disease.

As to the incidence of infection of the upper part of the respiratory tract and streptococcal infections, I am not quite in accord with Dr. Davidson's remarks. In private practice for a number of years, it seemed to me that there were a great many infections of the upper part of the respiratory tract, and I thought that many of these were probably streptococcal in origin, or if not in origin, at least complicated by the presence of streptococci. And so, a group at the National Children's Cardiac Hospital set out to learn whether streptococci were present or not. We were told by an eminent authority from Boston and New York that there were no streptococci in the Miami area. So this year we have taken throat cultures from presumably normal school children. During the month of February there was an incidence of group A beta hemolytic streptococci in normal school children attending class of a little over 3 per cent of the children studied. In the month of March it rose to 4 1/2 per cent, and for the month of April our figures are not complete, but it appears that there will be an incidence of about 12 per cent of beta hemolytic streptococci in normal school children attending class. One of the next phases in our work will be to determine how many streptoccal infections are actually to be found in the school children, and that will necessitate our going to the homes and getting cultures of those children who are not in school. We believe that although rheumatic fever is benefited in the Miami area and probably in the entire state of Florida, there is some other reason than just the infrequency of infection of the upper part of the respiratory tract and streptococci.

It was a pleasure to hear Dr. Davidson because he has taken up a cudgel that we have been bearing along with a few others in the Miami area for some 10 or 15 years, trying to iron out this problem of climate, especially in contradistinction to the Northern physicians who think that Miami or that Florida is not as ideal a place to live as we paint it.

DR. SIMON D. DOFF, Jacksonville: We are all interested in what Dr. Davidson has to say for geographic reasons as well as clinical reasons, and I think he should be encouraged to pursue his studies on this subject. I should like, however, to utter a word of caution. If death rates in New England states are to be compared with death rates in Florida, we want to remember that the population in the New England states is on the average older than it is in Florida. Similarly, in comparing Vermont with some Southwestern states, we must recognize that the state with a higher percentage of people in the older age groups will have a higher crude death rate for any diseases which are commonest in old people, such as heart disease.

DR. JAMES C. RINAMAN, St. Cloud: It was my privilege to be interested in the original early study of this subject made by Dr. Nichols and Dr. Roche. Of course a considerable amount of work has been done over the last 15 or 20 years. With the fact established that this type of climate is acceptable to patients with cardiac disease, it has been a problem to handle the patients who have been sent or have come to this area ill-advised or not advised by their physicians on how to travel. Many Florida physicians have regretted that these patients have arrived here decompensated to get the salt air and the sunshine, expecting us to get them well. In the early days I can remember many of them who died within a few days. Others were cardiac cripples for many weeks. If there is any way that we can teach the cardiologists and the general practitioners in the North how to advise their patients to travel here to live in happiness forever and ever, we will have done them a great service.

DR. DAVIDSON, concluding: I desire to thank the discussants. Regarding Dr. Rinaman's remarks, I think it was two or three years ago that Dr. Alvin E. Murphy read a paper before a meeting of the Florida Heart Association which was later published in The Journal of the Florida Medical Association (October 1951) on the subject of the indignities that we cardiologists in the state suffer at the hands of our Northern colleagues who have a tendency to dump their patients with cardiac disease in this area without proper precaution and also without proper advice.

Climate in relation to heart disease is an extremely difficult subject on which to carry out careful accurate statistical work, especially in relationship to patients with arteriosclerotic and hypertensive cardiac disease. As far as those with rheumatic cardiac disease are concerned, that work is being done and done well at this time by Dr. Saslaw at the National Children's Cardiac Hospital. I find it extremely difficult, however, to get accurate statistics and good careful experimental work which would show what all of us have observed clinically for many years, that this climate is a good climate for the patient with arteriosclerotic hypertensive cardiac disease. I believe that there should be more investigation, if possible, to show exactly why this climate is better, if it is.

The Surgical Treatment of Cancer of the Cervix and Uterine Fundus

Joseph Hyde Pratt, M.D.
Rochester, Minn.

In considering the surgical treatment of cancer of the cervix and of the uterine fundus, some details will be discussed of the methods used in establishing the diagnosis and its site, although the greatest emphasis will be, of course, on the treatment and results after the diagnosis has been confirmed.

We are fortunate in Rochester, Minn., in having a great number of patients pass through our clinic and we are able, therefore, to reach conclusions in a relatively short time that would be otherwise impossible. In 1951, for instance, there were 557 patients with malignant lesions of the female genitalia. Some 12 of these lesions were metastatic from the breast, stomach or other organs, and many patients were sent home as having inoperable lesions without exploration or extensive tests to determine the site of the original lesions. There were in 1951, however, 149 invasive squamous cell epitheliomas and in addition 70 were carcinoma-in-situ, or stage 0, 20 adenocarcinomas of the cervix and endocervix and 40 not specified. There were 126 malignant lesions of the uterine fundus. The remainder of the tumors were carcinoma of the vagina 10, vulva 18, fallopian tube 1, ovary 95, and miscellaneous group of 10 cases of multiple or widespread malignant lesions in which the primary site was not verified.

Carcinoma-in-situ of the Uterine Cervix

Cervical carcinomas-in-situ, or League of Nations stage 0, form a group in which the treatment and the prognosis are so entirely different from treatment and prognosis of the other cervical tumors that they need to be considered separately. They are found in younger women, the average age being 35 to 40 years compared to 48 years for invasive cervical carcinoma. There are no characteristic symptoms. There may be a history of vaginal spotting following trauma or a mild leukorrhea but this, of course, occurs in many benign conditions and is not by any stretch of the imagination characteristic of carcinoma-in-situ. The cervix may or may not show sufficient areas of erosion to arouse the interest of a suspicious observer and even when the erosion is extensive, it is not pathognomonic of early carcinoma. These lesions, therefore, must be diagnosed through routine biopsies of all areas of erosions or leukoplakia. In addition, great help is available through the screening process of vaginal smears, thus enabling the physician to pick out of the symptomless group those patients in whom further investigation is indicated.

During the past year our pathologists received material from approximately 10,000 patients seen in the Section of Obstetrics and Gynecology and out of this group they reported some 100 suspiciously positive or positive smears for malignant cells. The patients were then advised to have office biopsies or biopsies under anesthesia, and the diagnosis of malignant disease was confirmed in all but 1 or 2 cases. The pathologist, when studying the office biopsies, is of necessity studying small bits of tissue and therefore is reluctant to state definitely that the lesion is in-situ in all areas. The report of the vaginal smear when positive is, therefore, returned as "carcinoma of the cervix, apparently in-situ." This report to the clinician conveys the information that in none of the available blocks of tissue was invasive carcinoma found, but intimates that the pathologist would appreciate receiving further and larger specimens.

Surgical consultations are then requested, and the patient is sent to a hospital for biopsy under anesthesia and treatment as thereby indicated. The surgical specimens for biopsy are large and are practically a conization of the central cervical

Division of Surgery, Mayo Clinic, Rochester, Minn.
Read before the Florida Medical Association, Seventy-Ninth Annual Meeting, Hollywood, April 27, 1953.

and endocervical areas in order to get the important squamocolumnar junction. Frozen sections are immediately made, studied and reported as either carcinoma-in-situ, invasive carcinoma, or no residual carcinoma found. Not infrequently even small office biopsies when accompanied by light cautery to control bleeding result in enough destruction of the surface layers of the cervix so that the pathologist finds no identifiable carcinoma. When carcinoma-in-situ has been diagnosed on the basis of the office biopsy with no residual at operation, or when only carcinoma-in-situ is found in the surgical biopsies, our treatment has been hysterectomy including a 1 to 2 cm. vaginal cuff. My colleagues and I perform either a vaginal or an abdominal hysterectomy with preservation of the ovaries. Our belief concerning vaginal hysterectomy is that if the uterus can be removed without undue trauma to the cervix, without having to shift the position of the tenacula on the cervix, and without the necessity of hemisection or morcellation, then vaginal hysterectomy is a most satisfactory procedure. When, because of minimal descensus, or minimal vaginal relaxation, or the size of the uterus, we employ abdominal hysterectomy, we endeavor to remove at least a moderate cuff of vagina. If frozen sections reveal the carcinoma-in-situ extending out onto the vaginal mucosa, we immediately resect a further large cuff of vagina; however, this happens rarely.

We do not have sufficient long term follow-ups on these patients to offer any statistical evaluation of their prognosis. The carcinomas-in-situ comprised roughly 1 per cent of cervical malignant lesions before 1948 and now are about one third of all the cervical malignant lesions. In 1952 there were more than 80 cases of carcinoma-in-situ at the clinic, but most of our material has not yet approached a five year follow-up. There has been only 1 case in which we have suspected a recurrence. The patient had a positive vaginal smear one year after abdominal hysterectomy for carcinoma-in-situ. Biopsies revealed a carcinoma-in-situ of the vaginal vault. The vaginal vault was resected going widely around the area of carcinoma-in-situ, and the patient has been well and shows no signs of recurrence since the last operation. In serial sections, however, of the previously removed cervix we were able to find a tongue of carcinoma extending from the cervix out onto the vaginal wall to the edge of the surgical specimen. This patient, therefore, did not have a recurrence but only an incomplete removal of her original carcinoma. There is no agreement as to what might constitute adequate and good care of the patient with carcinoma-in-situ of the cervix. Te Linde[1] at Johns Hopkins advocated a radical hysterectomy removing the adjacent adnexal areas and a sizable cuff of vaginal mucosa but frequently leaving one ovary. The pelvic lymph nodes are not removed.

Scheffey and Lang[2] at Jefferson Medical College follow the other extreme; they believe that careful observation of in-situ lesions with circular biopsies and Papanicolaou smears at intervals are sufficient to control these patients.

One controversial point remains to be touched upon, namely carcinoma-in-situ during pregnancy. Considerable discussion has arisen on this subject which boils down to one fact. Either the pathologist can distinguish carcinoma-in-situ from epithelial changes in the cervix or he cannot. We are fortunate in having, associated with our surgical division, pathologists who believe they can diagnose the changes of pregnancies and can accurately identify the unusual carcinoma-in-situ seen during pregnancy. Our preference then is hysterectomy, though we have procrastinated in several cases after thorough discussion with the patient and her family of the diagnosis, of our usual treatment and of the element of risk involved.

Invasive Carcinoma of the Cervix

When invasive carcinoma of the cervix is diagnosed, our treatment at the Mayo Clinic has changed during the past few years. Until 1949 we treated stage I and many stage II lesions by Wertheim hysterectomy without preoperative radiation. By Wertheim hysterectomy is meant a radical hysterectomy, with bilateral salpingo-oophorectomy, removal of one third to one half of the vagina, and a bilateral dissection of the iliac, hypogastric and obturator nodes. The remaining patients all received radiation, both radium to the cervix by intensive broken dose technic and deep roentgen therapy to the lower part of the abdomen through two anterior and two posterior portals. Only a few of these patients, because of radio-resistant lesions or the development of pyometra or ovarian cysts, or other factors, were later seen by the surgeons. The results obtained in the non-irradiated selected surgical patients were good, but in an effort to better our over-all survivals we have now changed and endeavored to treat all invasive carcinomas of the cervix with pre-

operative radiation, approaching 7,000 mc. hours to the cervix in broken dosages and 1,000 to 1,500 air units of roentgens through each of four portals to the sides of the pelvis. The patients are seen three months later by gynecologist, surgeon and radiologist, and when one is a suitable candidate for surgical treatment, a Wertheim hysterectomy is advised. Owing to increased general interest in the cervical malignant lesions, we are now performing almost five times the number of Wertheim hysterectomies per year that were performed 10 years ago.

The ratio of cases in which resection was performed to total cases diagnosed has therefore increased from 10 or 15 per cent operability rate to a better than 33 per cent rate, and if carcinoma-in-situ were included, the rate would be well over 50 per cent. Our operability rate for invasive carcinoma of better than 33 per cent compares with Schlink's[3] of 50 per cent, Bonney's[4] of 63 per cent in ward patients and 80 per cent in private patients, and Morton's[5] of 10 per cent.

In almost all of the surgical patients before 1949 the lesions were originally considered stage I or stage II, although a few are stage III or IV. The staging of lesions is on the basis of the League of Nations classification (table 1).

Table 1.—Wertheim Hysterectomy 1930-1952: Distribution According to Stage

Stage	Number	Per Cent
I	162	55.3
II	108	36.8
III	21	7.2
IV	2	0.7
Total	293	100.0

In the last three years there has been a decided swing to the stage II and stage III lesions following radiation so that now in the majority of the patients undergoing Wertheim hysterectomy the lesions are stage II or stage III. It is necessary, therefore, to have series large enough not to compare surgical treatment with and without preoperative radiation but to compare lesions of similar staging with various forms of treatment.

The estimation of the stage is clinical and is made on the first visit of the patient before any treatment is undertaken. This original staging is utilized in all future studies, since this is the only one that can be satisfactorily used in the comparison of series of cases. All later groupings and staging, such as the surgical and pathologic data, are influenced by the previous treatment, though they are most helpful in the prognosis to the family. By definition we say a stage I malignant lesion is confined to the cervix, but probably 10 to 15 per cent of the clinical stage I malignant lesions will be found at operation to have positive nodes and some with such widespread involvement of aortic nodes as to be technically inoperable; surgically such a lesion is a stage IV lesion, but clinically it is a stage I lesion modified by the finding of positive nodes.

The patients are selected for surgical treatment on the basis first that the lesion seems technically removable and secondly that the patient presents a fair surgical risk. The results of radiation alone are too good to warrant advising patients to undergo an excessive surgical risk. The patient with severe cardiac or renal disease is excluded, and those with general debility are poor candidates for radical surgical treatment, as are the elderly. A physiologic age of more than 60 years is a fair criterion of increase in surgical risk, though certainly it is no absolute contraindication to surgical treatment. The obese patient, especially the patient with a round, protuberant, firm abdomen, makes an operation extremely difficult and tedious, and she does not tolerate prolonged surgical manipulation or anesthesia well. It is, therefore, wise on the initial visit to warn overweight patients that surgical treatment may be contemplated later and that it behooves them to get in the best possible shape for it by losing what excess weight they can. It has been an interesting observation during the last three years when almost all of the patients have had preoperative radiation that it is often easier to perform a pelvic node dissection on the moderately obese patient with a soft relaxed abdominal wall than on the thin patient whose pelvis has received full benefit of intensive radiation therapy. Since the fat of the heavier patient has filtered out much of the radiation, there are fewer changes due to radiation on the sides of the pelvis along the external and internal iliac vessels and the node-bearing fat can be stripped rather quickly and easily.

Our estimation of a technically removable lesion is based on the original staging and on the

pelvic examination as well as on roentgenograms of the patients three months after the preoperative radiation. Distant metastatic growths and the development of pain with a sciatic distribution and increasing in severity would exclude surgical treatment. Edema of one or both legs is highly suggestive of an inoperable lesion. Fixation of the pelvic structures to the lateral pelvic wall or direct invasion of bladder or rectum precludes the usual Wertheim hysterectomy. Such a patient, however, is at times amenable to some form of eventration operation. A radioresistant lesion, as suggested by smears or proved by biopsy, of course, strongly influences the choice of surgical intervention since the patient's prognosis is otherwise almost hopeless, though further radiation may give some palliation.

The details of technical procedures followed in carrying out a Wertheim type hysterectomy for invasive carcinoma of the cervix would not be of interest to this meeting. Suffice it to say that it is a prolonged operation with considerable loss of blood, and it requires the surgeon to work along and around the large vessels, nerves and organs of the pelvis, removing the generative organs and the regional lymphatic nodes and channels. This must be done; yet irreversible damage to the surrounding structures must be avoided. Nor can the surgeon forget that bladder, ureters, bowel or blood vessels may be involved directly by an otherwise operable lesion and he must be ready to take such steps as are necessary to go around the growth. Fortunately, most of the pelvic viscera are tolerant of damage if it is repaired promptly and the viscera are otherwise treated with gentleness and courtesy. If the training of the surgeon does not permit his performing a satisfactory, complete operation, handling difficulties as they arise, then in all probability more patients will survive with good radiation therapy than with incomplete surgical treatment.

The results, the difficulties and the early and late sequelae of such operation are pertinent in this discussion. The difficulties include hemorrhage, finding invasion of bladder, rectum, ureters, and other structures, or the damage of any of these viscera or the fixation of nodes to blood vessels by inflammations or tumor. Although the fascial planes tend to prevent early direct invasion of bladder or rectum, these are possibilities, and in such cases there is nothing to do but try to get around the tumor and repair the damage carefully when the operation is finished. Ureters can be cut and, if so, the most satisfactory course is reimplantation of the ureter into the bladder, which fortunately is not difficult. Blood and fluids keep surgical shock at a minimum as the low operative mortality rate in all recent large series of cases indicates.

Postoperatively we see surprisingly little to no bleeding and this in spite of the fact that many small vessels are controlled by pressure during the operation and by prayer afterward. Even hematomas are infrequent. The bladder gives the greatest difficulty, and we leave an indwelling catheter for five days, then recheck the residual urine twice daily. The catheter is left in the bladder for 24 hours if residuals persist at 400 to 500 cc. When trouble continues after 10 days, we try three to four bottles of strong beer per day. The patients love it, feel more relaxed and have fewer worries, while the fluid content keeps the urine output up. Seldom do we have a patient in the hospital longer than 14 days because of the bladder refusing to empty, and only 3 patients have remained for as long as three weeks.

Table 2.—Morbidity Following Wertheim Hysterectomy 1930-1952

Interval, Years	Patients	Morbidity*		Postoperative Deaths	
		Number	Per Cent	Number	Per Cent
1930-1934	31	29	93.5	4	12.9
1935-1939	27	21	77.8	1	3.7
1940-1944	46	28	60.9	4	8.7
1945-1949	70	35	50.0	0	0
1950	29	15	51.7	0	0
1951	40	21	52.5	0	0
1952	50	20	40.0	0	0
Total	293	169	57.7	9	3.1†

*Occurrence of temperature of 100.4 F. or higher on any two or more days following the day of operation.
†Last death, 1943; 205 consecutive Wertheim hysterectomies without a postoperative death since then.

Infection is still a factor to be reckoned with though not to the extent it was 15 years ago. In this group of patients there have been 16 major pelvic infections or abscesses; 5 occurred before the era of chemotherapy with 2 deaths in these 5 patients. In a number of other patients there developed vaginal discharges from serous to frankly purulent; yet these patients showed little elevation of temperature or subjective symptoms as the accompanying morbidity chart (table 2)

illustrates. Many minor aches and pains follow this operation, most of which are undiagnosed, but the average stay in the hospital is less than two weeks, and the patients soon forget or minimize their postoperative difficulties.

Table 2 well illustrates the effect of chemotherapy on this particular operation and the decided decrease in morbidity and mortality that has occurred since the use of the antibiotics. The basis for determining the morbidity is a strict one; yet morbidity reached a low of 40 per cent in 1952 and this in spite of the fact that 43 of 50 patients underwent preoperative radiation.

Phlebitis is a hazard but not more so than in other surgical procedures; there were 2 proved and 1 suspected fatal pulmonary emboli. Dicumarol was not used prophylactically in the majority of these patients though it is employed immediately if there is any suggestion of thrombosis. Thrombophlebitis may occur three to four weeks after the patient has been dismissed, and we have had at least 3 such occurrences.

Fistula is the late sequela that has helped give this operation a poor reputation. In 293 patients we had 13 fistulas, an incidence of 4.4 per cent. There were 3 ureterovaginal fistulas. Nephrectomy was performed in 2 cases and a reimplantation of the ureter in 1 case. One patient who had a rectovaginal fistula died in six months, and 1 patient who had a rectovesicovaginal fistula died in 18 months, both of extensive metastatic growths. There were 8 cases of vesicovaginal fistula; 1 patient died of a recurrent malignant lesion, 4 fistulas healed spontaneously, and 3 were repaired. We have not had many late ureteral obstructions, but in 1950-1952 there were 4 such cases. In 1 case the obstruction was due to metastasis, and the patient rapidly died. One ureter was reimplanted in the bladder, the third patient underwent nephrectomy, and the fourth underwent a transurethral dilatation.

So much for the postoperative difficulties and sequelae. What after this work have we accomplished for these women? We do have five year follow-up studies on the patients from 1930 through 1945.[6] There were only a scattering who had any preoperative radiation, but of the 109 patients surviving the operation and whom we could trace, 87 (79.8 per cent) were alive and well five years later (table 3).

In the four "lost" patients the lesions were stage I without nodes and would probably increase the five year survival rate if found. The five year evaluation in this surgical group of nonirradiated cases is an excellent criterion for we found that only 2 patients died in the fifth year and 1 in the sixth year. There are also 2 patients who underwent operation in 1946, 1 of whom died early in 1953 and the second, who has had known perineal metastatic growths for two to three years, now has a colostomy, but shows no further evidence of trouble following radiation therapy to the perineum.

Table 3.—Survival Rates After Wertheim Hysterectomy for Squamous Cell Epithelioma of the Cervix*

Period, Years	Patients		Lived Beyond Indicated Period	
	Total	Traced	Number	Per Cent†
3	135	130	112	86.2
5	113	109	87	79.8
10	56	55	36	65.5

*Inquiry as of Jan. 1, 1951. Included in the three year group are only those patients who were operated on three or more years prior to the time of inquiry, that is, in 1947 or earlier; the five year group includes those patients operated on in 1945 or earlier; the 10 year group includes patients operated on in 1940 or earlier.
†Per cent of traced patients.

Table 4.—Five Year Survival Rates After Wertheim Hysterectomy According to Stage*

Stage	Patients		Lived 5 or more years after operation	
	Total	Traced	Number	Per Cent†
I	76	72	61	84.7
II	29	29	24	82.8
III	7	7	2	28.6
IV	1	1	0	0
Total	113	109	87	79.8

*Inquiry as of Jan. 1, 1951. Included are only those patients who underwent operation five or more years prior to the inquiry; that is, in 1945 or earlier. Hospital mortality is excluded in the calculation of the survival rates.
†Per cent of traced patients.

Table 4 shows the five year survivals according to the clinical stage of the disease. There were 7 stage I cases and 7 stage II cases with involved nodes included in this study. Even though the number of stage II cases is small, the five year survivals are a remarkable 82.8 per cent. In stage I lesions without positive nodes the five year survivals were between 89 and 90 per cent. Since 1949 the majority of patients have undergone preoperative radiation, and the number of

operations per year has more than doubled so that before long we will have, from our own records, series of patients with and without preoperative radiation to try to estimate the effect of the radiation on the five year survivals.

The effectiveness of radiation on the pelvic nodes has been a highly controversial point. Henriksen,[7] in a study of 420 patients who died of cancer of the cervix, found that fibrosis plus hyalinization was present in the lymph nodes of 88 per cent of the patients treated by irradiation, but it was also present in 12 per cent of the patients who had had no irradiation. Morton[5] reported 35 per cent involved pelvic nodes in 51 nonirradiated patients and only 11 per cent in 43 postirradiated ones. Schlink[3] of Australia, however, has expressed the belief that irradiation has no effect on the pelvic nodes and therefore preoperatively he used only radium to the cervix.

In reviewing our 293 patients, we had 171 with no preoperative radiation and 122 who had undergone irradiation before their surgical treatment. In the stage I malignant lesions there were 119 without preoperative radiation; 10 of these (8.4 per cent) had metastatically involved lymph nodes. Of 43 stage I lesions with preoperative radiation, 5 (11.6 per cent) had metastasis to the nodes. In stage II lesions, 10 (24.4 per cent) of 41 without preoperative radiation had metastasis, and 16 (23.9 per cent) of 67 with preoperative radiation had metastasis. There were only 11 stage III lesions which had not been irradiated, and 4 had positive nodes; following irradiation 2 of 10 showed positive nodes. These series of cases graded and treated by the same group of physicians are now becoming large enough to be of statistical interest and would certainly seem to question the effectiveness of irradiation on pelvic lymph nodes with metastatic cancer.

Malignancy of the Uterine Fundus

Carcinoma of the uterine fundus falls between invasive carcinoma of the cervix and carcinoma-in-situ in its prognosis and varies from both of these two latter lesions in the type of tumor that is usually encountered. The malignant lesions of the fundus are not as common as those of the cervix; between 1910 and 1944 there were 3,799 carcinomas of the cervix and 1,578 carcinomas of the uterine fundus seen at the Mayo Clinic, a ratio of about 2.5:1. The lesions of the fundus are predominantly adenocarcinoma, 80 to 85 per cent, the remainder being squamous cell carcinoma 5 to 6 per cent, adenoacanthoma 5 to 10 per cent, and a rare mixed group of sarcoma and so forth, 1 to 3 per cent. The adenocarcinomas which arise from the endometrial glands are largely of grade 1 or grade 2 malignancy and only 15 to 20 per cent are high grade 3 or grade 4 tumors.

The patients with a fundal malignant lesion are older than those with cervical lesions, the average age being about 58 years, or roughly 10 years beyond the average age of the menopause. Also many of these patients had a delayed menopause and continued menstruating after they were 50 years old.

Vaginal bleeding is, of course, the outstanding complaint of these women, though any change in color or odor of the vaginal drainage is significant and the older the patient the more significant it becomes. In the postmenopausal woman bleeding means malignant disease in 20 per cent or more of the patients, and a daily spotting or staining is the more characteristic finding.

The diagnosis must be made on the basis of endometrial biopsies, preferably dilatation and curettage under anesthesia. If the surgeon is fortunate, a competent pathologist will be present who can make and accurately interpret frozen sections. In such a case the diagnosis is established in a period of minutes and the type of treatment best suited to the patient is begun. In Rochester we believe that immediate total abdominal hysterectomy with bilateral salpingo-oophorectomy is the procedure of choice. We pack the uterus when the diagnosis is confirmed, then suture the cervix, reprepare the vagina by thorough scrubbing with liberal quantities of soap and water and open the abdomen through the lower midline. Our first thought is the question of tubal, ovarian or peritoneal implants in the pelvis, then palpation of the liver and upper part of the abdomen for distant metastatic growths. When the uterus, tubes and ovaries have been removed, we investigate the node-bearing areas on the sides of the pelvis and remove any grossly enlarged nodes that may be present. In 1950-1951, 1 patient with positive nodes was found in 5 in whom enlarged nodes were removed. It is particularly important in the rarer high grade malignant lesion to remember that lesions may spread to the lateral pelvic nodes early.

In a few of the patients with adequate relaxation and with low grade carcinomas, a vaginal hysterectomy is performed instead of an abdominal one. The latter is preferable, but in some elderly

patients, or excessively obese patients, or those in whom the cardiac status increases the risk of abdominal surgical procedures, a vaginal hysterectomy is the procedure of choice, and the prognosis is good. From 1930 through 1946, 82.7 per cent of these patients survived five years following vaginal hysterectomy for carcinoma of the uterine fundus.

When increasing risk due to age, obesity or concomitant disease outweighs the advantages of surgical treatment, then radiation still has a great deal to offer. Later a few through loss of weight, change in cardiac status, and other factors, are found to be satisfactory for a surgical procedure, and if so the removal of the uterus is then advised.

One group deserves special attention. When a malignant lesion of the fundus occurs in a patient aged less than 40 years,[8] the patient often falls into a predictable pattern of the four "h's," or heavy, hairy, hypertensive and h'infertile. The girls tend to be irregular in amount of flow of the menses, as well as in rhythm, and there are often associated months of amenorrhea. Fertility is low, and conception is infrequent. The ovaries may be symmetrically enlarged. At operation the ovaries often are two to three times normal size with thick, hard rinds and numbers of unruptured follicular cysts, the typical ovary of the Stein-Leventhal syndrome. Most of the fundal malignant lesions seen in patients aged less than 40 are grade 1; therefore the prognosis is unusually good, and the five year survivals are numerous.

In any discussion of carcinoma of the uterine fundus the question of preoperative radiation is always pertinent. We have not used radiation as a primary form of treatment but only in those cases in which, because of obesity or concomitant disease, the patients were considered to be poor surgical risks yet later may become good risks. Our primary mode of treatment is hysterectomy without preoperative radiation. Radiation is certainly not the whole answer since 30 per cent or more of the postradiation uteri will exhibit residual malignant tissue following their radiation. Corscaden,[9] in a scholarly review, came to the conclusion that hysterectomy alone should give at least a 60 per cent five year survival and perhaps 70 per cent. A few physicians can approach this with planned radiation therapy. He presented evidence of the effect of radiation on metastatic growths and concluded that the combination of radiation and hysterectomy gives better results than either alone.

During the 17 year period from 1930 through 1946 at the Mayo Clinic we saw more than 1,000 patients whose disease we diagnosed as adenocarcinoma of the uterine fundus.* Of the 729 surgical patients, we have been able to trace 667 or 91.5 per cent, and of these 295 were treated by hysterectomy and radiation therapy, and 372 were treated by hysterectomy alone. Our over-all five year survivals of those treated by hysterectomy with or without postoperative radiation was 75.0 per cent. Abdominal hysterectomy without radiation gave a five year survival rate of 81.5 per cent, and hysterectomy plus postoperative radiation a five year survival rate of 64.8 per cent. The lowered survival rate with radiation was, of course, due to the utilization of postoperative radiation when there were questionable metastatic growths, deep penetration of the uterine wall and the like. Although a few of these patients had undergone dilatation and curettage elsewhere and were then referred to us so that their hysterectomies were performed a few days to a week or two after the initial surgical procedure, in the great majority the diagnosis was made by frozen sections, and surgical intervention was immediately carried out.

There were also 81 patients who had undergone vaginal hysterectomy in these 17 years who could be traced; 67 (82.7 per cent) survived five years.

The hospital mortality rate was higher than we would like; there were 14 deaths among 651 patients with abdominal hysterectomy or 2.2 per cent mortality. Most of these deaths occurred in the early 1930's, and there was only 1 death in 1940 and a final 1 in 1946. Among the total of 93 patients subjected to vaginal hysterectomies there was only 1 death and this occurred in 1932.

Summary

A brief discussion is presented of the results of the surgical treatment of carcinoma-in-situ of the cervix, of invasive squamous cell epithelioma of the cervix and of adenocarcinoma of the uterine fundus.

The lack of diagnostic symptoms or findings is emphasized in the carcinomas-in-situ and the necessity of the use of routine biopsies in all suspicious cervices or in any with cervical erosion. The examination of vaginal smears as a screening process of numbers of patients is useful. Varia-

*Study being conducted at the present time.

tions in treatment are mentioned, and abdominal or vaginal hysterectomy is advised as having been satisfactory in our hands.

The surgical treatment of invasive squamous cell epithelioma of the cervix with a follow-up of 109 cases from 1930 through 1945 inclusive is reviewed. In this group treated with surgery and without preoperative radiation, the over-all five year survival of traced patients was 79.8 per cent, while in stage I lesions it was 84.7 per cent, and in stage II lesions a surprising 82.8 per cent. The attending difficulties and complications of the Wertheim hysterectomy are emphasized. Finally, the policy at the clinic in the last four years to use preoperative radiation wherever feasible will soon furnish a series of patients who can be compared to the surgical patients without preoperative radiation both as to complications and as to five year survivals.

Adenocarcinoma of the uterine fundus is seen primarily in an older group of patients and can be suspected on the basis of postmenopausal bleeding. The controversial point of the use of preoperative radiation is discussed briefly. Dilatation and curettage with diagnosis by frozen section and immediate hysterectomy are at present the practice at the Mayo Clinic, and the results from 1930 through 1946 show that 75.0 per cent of those treated by hysterectomy with or without radiation survived five or more years.

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Mayo Clinic.

High Creatinemia with Recovery in a Patient with a Congenital (Single) Kidney

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It is now 30 years since it was first observed that the creatinine in the blood is greatly elevated in cases of severe renal impairment. Folin was the first to show that the amount of creatinine excreted in the urine by a normal person on a meat-free diet is quite independent of either the amount of protein in the food or the total nitrogen in the urine, the amount excreted from day to day being practically constant, thus pointing conclusively to its endogenous origin. Recently it has been proved by the use of tracer isotopes that creatinine originates from creatine. This is formed from glycine and arginine in the kidney while glycocyamine is methylated in the liver by methionine to form creatine.

High values for blood creatinine (over 4 mg. per hundred cubic centimeters) have been observed in a variety of conditions causing clinical azotemia and these fall into three main categories:

(1) Primary renal azotemia includes various forms of Bright's disease, but chiefly glomerulonephritis and nephrosclerosis, pyelonephritis and bilateral polycystic kidney disease.

(2) Extrarenal azotemia includes such varied conditions as anuria caused by chemical poisoning (bichloride of mercury and phenol), incompatible blood transfusions, pregnancy toxemias, severe burns; crush, blast and submersion syndromes (the shock kidney), and anuria occurring as a reflex following instrumentation. It is in this group of cases of renal failure, in which there

*Deceased.
Read before the staff of the Edgewater Hospital, Miami, March 18, 1953.

is hope that the kidneys may regain adequate function within a fairly short time, that the use of the artificial kidney is indicated.

(3) Postrenal azotemia, or obstructive uropathy, includes anuria caused by calculus blockade, prostatic hyperplasia and hypertrophy, vesical neoplasms, contractures of the vesical neck, and mechanical obstruction or surgical injury to any part of the urinary tract (accidental severance or ligation of the ureters).

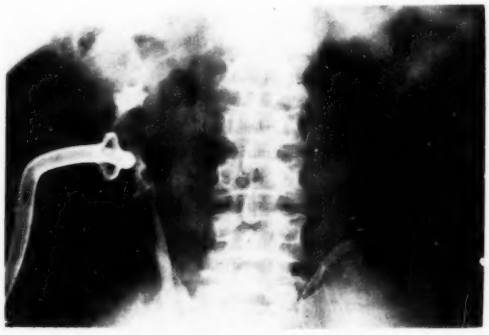

Fig. 1. — Retrograde pyelogram with blood clot at ureteropelvic junction.

Attention was first called to the unfavorable prognostic import of an elevated blood creatinine by Myers and Lough[1] in 1915. They suggested that since creatinine was almost wholly endogenous in origin and furthermore since it was apparently the most readily eliminated of the three nitrogenous waste products, uric acid, urea and creatinine, it should be of greater prognostic value than either uric acid or urea. These authors stated in their original paper: "The creatinine rises above 2.5 mgs. per 100 cc. of blood almost without exception only in conditions with renal involvement. Creatinine values from 2.5 to 3.0 mgs. may be viewed with suspicion; figures from 3.0 to 5.0 mgs. regarded as decidedly unfavorable, while over 5.0 mgs. probably indicates an early fatal termination." It soon became apparent, after studying reports of many observers of survival cases, that while elevations of over 5.0 mg. of creatinine usually indicated a fatal prognosis in the primary renal azotemia, this was not true in the acute conditions comprising the extrarenal and postrenal azotemias.

Gaberman and others[2] studied 44 cases of azotemia in the three categories mentioned. No diagnostically significant correlation between creatinine and nonprotein nitrogen was found in any of the three groups. Although the creatinine level may be increased in proportion to the nonprotein nitrogen elevation in all three categories, a creatinine value disproportionately low as compared to the elevation of the nonprotein nitrogen is usually indicative of extrarenal or postrenal azotemia. Instances can occur, however, in which an extrarenal or postrenal condition may be superimposed on a kidney with parenchymatous disease. The following case report might well illustrate such a combination:

Report of Case

L. K., a man aged 63, was admitted to the Edgewater Hospital on August 14, 1952, with a history of failure to pass urine for seven days. He had been treated by a local physician with mercuhydrin administered every four hours, and when this therapy failed, called another physician who promptly hospitalized him. The patient stated that he had passed a calculus three years previously and was of the opinion that he may have passed another stone two days before the onset of his present illness. On admission, the blood nonprotein nitrogen was 158 mg. per hundred cubic centimeters and the creatinine 14.5 mg. These determinations were repeated with the same results. The blood count at the time of admission was white blood cells 11,700; polymorphonuclears 81 per cent, small lymphocytes 13 per cent, monocytes 2 per cent, eosinophils 4 per cent; red blood cells 3,860,000; hemoglobin 74.1 per cent, or 12.6 Gm.; color index less than 1.

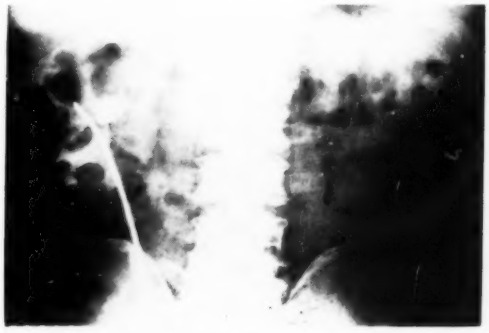

Fig. 2. — Excretion pyelogram. Blood clot no longer visible.

On cystoscopy the right ureteral orifice was the site of pronounced bullous edema and gave the appearance of a calculus trapped in the intramural portion, or one that recently had been expelled. No ureteral orifice was visible on the left side. Indigocarmine injected intravenously failed to appear after an interval of 20 minutes. A French No. 6 catheter was passed up the right ureter for a distance of 27 cm., without encountering obstruction. Almost 600 cc. of urine under tension was released. A roentgenogram failed to reveal a kidney shadow on the left and gave no evidence of opaque calculi on the right. A small nonopaque shadow within the pelvis was thought to be a blood clot. Reasoning that we were dealing with a large extrarenal hydronephrosis, secondary to a blockade at the ureteropelvic junction, we decided to dispense

with the retrograde pyelogram. In view of the operative findings, however, this procedure would have been helpful. We felt justified in advising exploration of the kidney for the following reasons:

(1) Removing the retained urine would not necessarily relieve the pathologic condition causing the blockade;

(2) Indwelling catheter drainage in our experience has been unsatisfactory since the catheters are usually expelled in 2 or 3 days;

(3) It was hoped that in the face of a postrenal azotemia, nephrostomy tube drainage would restore kidney function more quickly.

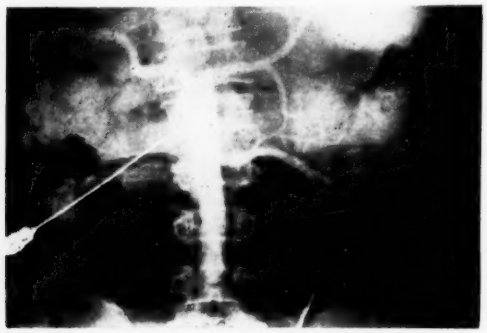

Fig. 3. — Aortogram showing absence of renal circulation on the left side.

At operation the kidney was tense and twice its normal size. The ureter, which was normal, was traced upwards to its entrance into an intrarenal pelvis. The tip of the catheter, which was left indwelling at cystoscopy, was now felt just below the ureteropelvic junction. It had apparently slipped out of the pelvis when the patient was placed in position on the table. The ureter was opened between two guide sutures just below the ureteropelvic junction, and a firm organized blood clot, adherent to the ureteral wall, was removed. A French No. 32 Malecot nephrostomy tube was now introduced into the renal pelvis, and a French No. 11 Levin tube, to serve as a splinting catheter, was passed well down the ureter. Both tubes were brought to the outside through a stab wound in the loin. The outer coats of the ureteral wall were approximated with a single catgut suture, the kidney replaced, and the wound closed in layers.

On the second postoperative day the blood nonprotein nitrogen totaled 110 mg.; the creatinine was 4.35 mg. The following day the patient passed 20 cc. of grossly clear urine which apparently had seeped into the bladder alongside the splinting catheter. Examination of a large blood clot expelled immediately afterward failed to reveal the presence of a calculus. On the fourth postoperative day the blood nonprotein nitrogen was 40.4 mg. and the creatinine 2.6 mg. On the next day excretion urography failed to reveal any evidence of dye in the left renal fossa to indicate the presence of a kidney on that side. The presence of dye in the bladder was confirmatory evidence that urine from the right renal pelvis was escaping alongside the splint even though the nephrostomy tube was draining well. Intake for 24 hours totaled 3,000 cc., and the output was 2,000 cc. By the eighth postoperative day the temperature was normal, the blood nonprotein nitrogen was 39.5 mg. and the creatinine 2.1 mg. The splint catheter was removed on the thirteenth postoperative day. Four days later the patient began to void in small amounts every two hours. He was discharged from the hospital on the eighteenth postoperative day with the nephrostomy tube draining well, and the operative wound healed by primary union.

The nephrostomy tube was removed on the thirty-ninth postoperative day.

Approximately one month after his discharge from the Edgewater Hospital, the patient entered Mercy Hospital because of a draining lumbar sinus and for further study. On cystoscopy a ureteropyelogram was obtained with the use of a bulb occlusion catheter. Following this procedure a French No. 9 catheter was left indwelling. Two days later excretion urography was performed. The blood clot present on the retrograde pyelogram was no longer present. Because of a suspicious filling defect in the lower calyx, cytology studies were made. They demonstrated atypical cells, grade II. This finding was not regarded as significant. On the following day angiography was performed, with the use of 70 per cent Urokon sodium; this demonstrated the absence of renal circulation on the left side, confirming the diagnosis of renal agenesis. The operative sinus was dry. The indwelling catheter was removed after three days, and the patient was discharged.

When last seen on October 17, he was asymptomatic.

Conclusion

A case of pronounced creatinemia in a patient with a single congenital kidney is presented.

Creatinine values of over 5 mg. in the blood are not necessarily fatal if the azotemias are of the extrarenal or postrenal varieties.

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The Basic Principles of Medical Renal Disease

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A discussion of the basic principles of medical renal disease will be presented in an attempt to relate the anatomic and biochemical pathologic changes with the clinical manifestations, and to derive therefrom a practical therapeutic approach. Such a discussion should logically commence with the physical elements which are involved in these pathologic changes, the nephron, its vascular supply and immediate environment, and the interstitial tissues.

The Glomerulus

This is a tuft of capillaries connected by a loose areolar tissue and enveloped by a simple epithelial layer of cells, which is the invaginated portion of Bowman's capsule. Between the endothelial layer of cells of the capillary wall and the epithelial cells is an homogenous basement membrane.

The glomerular tufts differ from the capillaries elsewhere in the body in the following respects: (1) they lie between two arterioles; (2) the wall is a double membrane, endothelium and epithelium; (3) there is no reabsorption; and (4) the blood pressure is twice that of the other capillaries.

The Tubules

Immediately beyond the expansion of Bowman's capsule, the tubule system commences with the proximal convoluted tubule composed of tall active cells with a narrow serrated lumen. This is followed by the deep straight descending limb of Henle's loop, which is formed by flattened thin cells surrounding a relatively wide lumen. The ascending portion of the loop is formed of cuboidal cells, which pass into the distal convoluted tubule, with its taller cells not unlike those seen in the proximal segment. This system finally empties into the collecting tubule, which carries the urine towards the renal pyramids.

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The Vascular Supply

The functional portion of the blood supply to the nephron arises in the afferent arteriole which shows the three layers of the typical arteriole, which changes immediately adjacent to the glomerulus with the substitution of epithelioid cells for the muscle fibers (the juxtaglomerular apparatus). A similar change occurs in the efferent arteriole immediately distal to the glomerulus. These cells are thought to swell and constrict the lumen, when stimulated, being more capable of prolonged constriction than muscle fibers. The efferent arteriole then breaks down to form a typical capillary bed which enmeshes the entire tubular system before draining into the venous system.

This description of the vascular distribution applies to those glomeruli which lie in the outer two thirds of the cortex. Trueta and his associates have described the juxtamedullary glomeruli in which the efferent arteriole divides into two or more vasa recta which pass deeply into the medulla forming loops parallel to Henle's loop. The inference is that the tubular system in these nephrons is not intimately surrounded by capillaries, and homeostasis is not the rapid active function that occurs in the outer cortical nephrons.

The Interstitial Tissues

These are typical areolar tissues which have little significance except in disease processes, particularly the infective type, in which the inflammatory processes lead to increased pressure about the nephron with resultant mechanical obstruction.

Physiology of the Nephron

This commences with glomerular filtration which is a purely physical function determined by the high hydrostatic pressure in the capillaries, opposed by the oncotic pressure of the plasma

proteins, the interstitial tissue pressure and the tubular fluid back pressure, which provides a filtration pressure of approximately 35 mm. of mercury Hg. This filtration pressure is changed by:

I. Hydrostatic Changes
   A. Arterial pressure changes.
   B. Changes in the myoepithelial cells of the juxtaglomerular apparatus.
   C. Resistance of the efferent arteriole.
   D. Increased venous pressure.
   E. Increased renal intrapelvic pressure.
   F. Increased interstitial pressure.

II. Hemodynamic Changes
   Changes in oncotic pressure due to alteration in the plasma protein levels, that is, hemodilution and hemoconcentration.

III. Glomerular Disease
   A. Glomerulonephritis.
   B. Kimmelstiel-Wilson syndrome.
   C. Amyloid disease.
   D. Disseminated lupus erythematosus.

Tubular Function

The physical nature of the glomerular filtration is such that loss of this filtrate unchanged is incompatible with life. It is by virtue of tubular function that a delicate balance in homeostasis is obtained.

I. Proximal Convoluted Tubule
   This is the site of obligatory reabsorption of glucose, water, sodium, bicarbonate, chloride and ascorbic acid. The degree of absorption is a function of the rate of flow past the cells, and constitutes a gross replacement of the essential products.
   These same cells excrete penicillin, paraaminohippurate, Diodrast, creatinine and phenolsulfonphthalein, but this excretion is somewhat limited by the concentration of the substance, as well as the combined concentrations of the various substances. This phenomenon is employed in blocking penicillin excretion with caronamide.

II. The Thin Segment
   This simple histologic structure suggests that continuation of obligatory reabsorption occurs in this portion permitting equilibrium with the adjacent interstitial fluid by simple osmotic adjustment. It is with this simple diffusion of water across the membrane that the nonprotein nitrogen products are reabsorbed to approximately 40 per cent of that excreted in the glomerular filtrate.

III. The Distal Convoluted Tubule
   This terminal portion of the nephron constitutes an endocrine target organ, and it is here that the delicate homeostatic balance is achieved. There is a facultative reabsorption of water, sodium, chlorine and bicarbonate, under the influence of the pituitary antidiuretic hormone and a factor secreted by the adrenal cortex.
   A. The posthypophyseal-hypothalamic complex is stimulated to secrete its hormone by an increase in the plasma osmotic pressure. The hormone acts on the cells of the distal tubule to reabsorb a hypotonic solution and to leave a small volume of hypertonic urine.
   B. The adrenal cortex secretes a factor which stimulates sodium absorption and is said to prevent excess reabsorption of potassium.

   The distal tubule is also partially responsible for the maintenance of acid base balance and secretes ammonia and hydrogen ions in response to changes in the hydrogen ion concentration of the adjacent interstitial fluids.

   The small moment-to-moment changes in hydrogen ion concentration are corrected by the secretion of hydrogen ions, which is done quickly and effectively by the liberation of the ions from carbonic acid by carbonic anhydrase.

   When a more profound and prolonged lowering in hydrogen ion concentration occurs over a period of several days, ammonia is formed from glutamine and other amino acids and secreted in order to preserve the essential bases such as sodium and potassium.

These tubular functions lend themselves readily to their employment as clinical tests of renal efficiency.

The simplest and most inexpensive test is that of determining the concentrating and diluting ability of the kidney, since, as the tubular function diminishes, the specific gravity of the urine approaches that of the glomerular filtrate and the adjacent interstitial fluids, which is ap-

proximately 1.010 (1.005-1.012). The dilution test may, however, be interferred with by adrenal, hepatic, intestinal, cardiac and neurohypophyseal dysfunction, whereas the concentration test is only interferred with by a receding edema, and is, therefore, almost foolproof as a test of tubular function.

The phenolsulfonphthalein (P.S.P.) test is commonly employed to determine kidney function. This dye is readily excreted by the cells of the proximal convoluted tubules, and therefore the test is not too sensitive, but will give reliable positive results when moderately severe impairment has occurred in tubular function or renal blood flow. Experience has shown that early impairment may be detected more accurately with 15, 30, 60 and 120 minute assessments of the urinary excretion of the dye, in which the 15 minute specimen may be the only one to show diminished excretion. "Humps" in the excretion curve suggest errors in technic, the most common of which is failure to provide an adequate diuresis. Values greater than normal may be encountered in the presence of the increased renal blood flow of acute glomerulonephritis and early essential hypertension.

This test is also subject to error, for its excretion in the urine depends upon: (1) the rate of renal blood flow; (2) the functional capacity of the tubules to extract the dye from the blood stream (normally 50 per cent); (3) the rate of urinary flow through the collecting tubules, pelves and ureters; and (4) the presence of tubular blocking agents, such as para-aminohippurate and Diodrast. It, therefore, must be assessed in the light of other tests, therapy, general vascular disturbances and postrenal obstruction.

Pathology

It becomes apparent that disease processes may effect one or more of these components of the functioning nephron, either structurally or functionally, and often both.

The glomerular filtrate may be increased by an increased permeability or decreased by obliteration of the capillaries, thus reducing the filtration surface.

Proteinuria

Perhaps the most important clinical feature of glomerular dysfunction is the presence of protein in the urine.

Normal urine has approximately 200 mg. of protein per day, which is a little less than a trace and is due to desquamation of cells lining the nephron and urinary tract.

It has been shown that capillaries allow protein to pass through into the interstitial tissues. In the subcutaneous fluids this amounts to about 0.1 per cent, in the renal fluids to about 4 per cent, and in the liver up to 7 per cent. The glomerular capillaries, however, by virtue of their double membrane, are more retentive than other capillaries.

Studies on hemoglobin, which has approximately the same sized molecule as albumin, show that it is filtered through the glomerulus at a rate approximately 3 per cent of the water-soluble filtrates. Osmotically this amount is negligible, but even such a small leak would amount to 20 Gm. of protein per day.

With an essentially protein-free urine it is evident that there must be a tubular reabsorption of protein, and it has been estimated that the maximum tubular reabsorption capacity for colloids is approximately 3 mg. per minute. Since there is a slow transfer from the cell to the interstitial fluid, the capacity is depressed with prolonged reabsorption or high glomerular filtration of proteins. That is, the normal virtual absence of protein from the urine may be attributed to extreme retentiveness of the glomerulus and the tubular capacity for colloid reabsorption, and proteinuria is due to glomerular leaks or tubular failure. Studies have shown that the glomerular lesions are by far the most common cause of proteinuria. Some authors believe that the loss of protein in the urine is an expression of the kidney's attempt to compensate for reduced glomerular filtration surface by an increase in the glomerular permeability. The belief is supported by the observation that intravenous calcium gluconate, which decreases capillary permeability, will decrease the degree of proteinuria, but is accompanied by an increase in the nonprotein nitrogen level in the blood.

Casts

A second important clinical finding associated with glomerular lesions and proteinuria is the formation of casts. These are cylindric masses of coagulated protein, possibly containing cellular debris, and usually formed in the distal tubules and collecting tubules. The formation of a cast is dependent upon:

I. The concentration and nature of the protein.

II. The hydrogen ion concentration of the tubular fluid, which usually changes from alkaline to acid in the region of the distal tubule.

III. The concentration of the water-soluble substances such as urea and electrolytes, which appear to have a dispersive effect inhibiting cast formation the greater the concentration.

IV. The concentration of a nondialyzable substance, called the X-body, which is related to chondroitin sulfuric acid, and is secreted by the tubular cells.

The types of casts are:

I. Hyaline — formed directly from the protein lost in the glomerular filtrate.

II. Epithelial — formed from the desquamated cells of the nephron.

III. Blood casts — formed by blood cells entangled in fibrin, which is converted from fibrinogen by the presence of calcium in the glomerular filtrate and histamine-like substances from the tubule cell breakdown. Such casts are present in glomerulonephritis, embolic nephritis, lupus erythematosis and periarteritis nodosa, and are of important clinical significance since they are unequivocal proof of parenchymal bleeding, whereas hematuria may have occurred at any point in the urinary tract.

Such casts, of course, are frequently mixed since the three basic elements are often found together in renal disease.

Epithelial casts and hyaline casts with cellular debris have some clinical significance since the epithelial elements undergo progressive disintegration which passes through a coarsely granular stage, a finely granular stage and finally a stage of homogeneous waxy appearance with a high refractive index. These stages, therefore, represent a rough index of the flow of urine within the nephron in which they were formed, hence the presence of waxy casts after periods of anuria and renal ischemia.

Fatty casts may also be seen, which contain fat droplets derived from desquamated tubule cells which have undergone fat phanerosis, indicating the presence of chronic tubular disease.

The diameter of a cast is of some significance since the distal convoluted tubule is fairly uniform, but the collecting tubules gradually increase in diameter as they approach the renal pyramid. Many nephrons empty into a single collecting tubule, which unites with other such tubules to converge on the ducts of Bellini. Within this system the rate of flow of urine reaches its maximum within the kidney parenchyma. The formation of a cast within this system is therefore relatively difficult, and when a broad cast is formed, it signifies gross stasis involving many nephrons, hence the name "renal failure" casts since they herald renal failure.

Narrow casts, on the other hand, indicate swelling of the tubular cells, under some toxic or degenerative influence, which has constricted the tubular lumen.

These casts must be centrifuged and examined as soon as possible after excretion, or the urine acidified if there is to be delay in examination, since they dissolve in alkaline urine, and will, of course, disappear in those urines allowed to stand for a few hours and be alkalinized by bacterial action.

A discussion of proteinuria should not be left without reference to the massive albuminuria associated with the nephrotic syndrome, in which 5 to 10 Gm. of protein is commonly lost daily, occasionally rising to as high as 60 Gm.

Such a high loss of protein would suggest that glomerular filtration has been increased, yet no glomerular pathology has been noted in lipoid nephrosis; and in those diseases in which glomerular damage ultimately occurs, the nephrotic syndrome is encountered when the disease process has not yet encroached upon the filtering area. Furthermore, at this stage, kidney function tests appear to be excellent.

Some workers have blamed tubular function for the disorder, and undoubtedly the tubule cells show swelling of considerable degree and vacuolization, especially in the proximal convoluted tubules. Since, however, no tubular secretion of albumin has ever been demonstrated, the simple blocking of the protein reabsorptive process by excess protein is not sufficient to account for losses of protein which may far exceed the maximum glomerular filtration of the normal kidney.

Others have blamed the plasma proteins and claim that there is a lowering of their oncotic pressure. All studies, however, have failed to reveal any abnormality in the proteins in the plasma or in the urine.

The facts do not preclude the possibility of a functional change in glomerular filtration, which is supported by the work of Lange, Weiner and Boyd, who demonstrated a great increase in capil-

lary permeability throughout the body, and showed that the appearance and disappearance of edema closely parallels the change in capillary permeability.

The nephrotic edema has been explained on the basis of the secondary (or possibly primary) hypoproteinemia. This edema, however, will persist in spite of excessive protein in food, blood transfusions and concentrated serum albumin; yet it will recede with great loss of weight, long before the plasma oncotic pressure returns to normal. The recession of edema, however, has been related, along with proteinuria, to the change in capillary permeability.

It is noteworthy that plasma complement is lost during excessive or prolonged proteinuria, leading to a loss of resistance to infection.

Hematuria

The causes of hematuria of parenchymal origin have been discussed in relation to the formation of blood casts, but it is important to recall that clinically significant amounts of blood may not be detected by gross inspection or by the benzidine or guaiac tests, yet may be readily appreciated beneath the microscope. The importance of the chemical tests is in the detection of hemoglobin in those urines in which red cells are not seen. The presence of hemoglobin in the urine may be associated with intravascular or intraurinary hemolysis. The latter may be distinguished by the presence of "ghost" cells.

Hypertension

One of the most common clinical findings is hypertension. The most popular theory of the production of renal hypertension is that ischemia of the renal parenchyma produces, from its tubule cells, a proteolytic enzyme, renin, which splits an alpha globulin, produced in the liver, to form angiotonin or hypertensin, which reduces the oxygen requirements of the nephron, increases the force of the heart beat, raises the blood pressure and preferentially constricts the efferent glomerular arteriole.

That this is an oversimplified theory is suggested by the work of Grollman, Muirhead and Vanatta, who performed bilateral nephrectomy in dogs producing a severe hypertension, and found that a pronounced proliferation of the eosinophilic cells of the anterior pituitary occurred, with an absolute or relative diminution of the number of chromophobe cells and basophile cells. Further evidence of an endocrine involvement was shown by Heinbecker, who performed unilateral nephrectomy in dogs to produce a "work hypertrophy" of the remaining kidney. He found that he could prevent this hypertrophy by removing the anterior pituitary or the adrenal cortex. From these findings he postulated that renin, secreted by the overloaded or relatively ischemic kidney, stimulates the eosinophils of the anterior pituitary to secrete an adrenocorticotrophic hormone which, in turn, stimulates the adrenal cortex to secrete a factor promoting the hypertrophy of the kidney. Selye demonstrated that an unidentified adrenocortical steroid is capable of producing profound renal damage. Page suggested that angiotonin, while increasing the renal blood flow, induces an increased loss of urinary sodium, which stimulates the adrenal zona glomerulosa to secrete its sodium-retaining factor as well as the steroid suggested by Selye, which produces nephrosclerosis, thereby retarding the renal blood flow and creating a vicious circle.

It has also been demonstrated that intermittent overactivity of the sympathetic nervous system and the adrenal medulla may produce renal ischemia. The association of the hypothalamus with the pituitary and the sympathetic nervous system suggests that this complex pituitary-adrenal-renal dysfunction may also be the mechanism in the production of essential hypertension, which is so often associated with "high tension" living and may be initiated via the corticohypothalamic pathways.

It has also been suggested that renal hypertension may possibly be a deficiency disease. Grollman thought that the normal kidney tends to maintain normal blood pressure by inactivating pressor agents, which may be supported by the observation that the kidney contains a higher concentration of angiotonase than any other tissue. Findley suggested that the renal tubule secretes "something" which depresses the functional activities of the eosinophile-adrenal-cortical complex, and that in the absence of this factor the eosinophilic proliferation proceeds unchecked to stimulate the production of the nephrosclerotic steroid from the adrenal cortex.

Renal Insufficiency

All grades of renal insufficiency occur, but the ultimate manifestation is the appearance of uremia, a clinical syndrome associated with renal failure and a consequent disturbance of the body chemistry with loss of normal function.

The syndrome may be acute or chronic, and caused by the following:

Prerenal — circulatory failure or dehydration.

Renal — vascular, parenchymal or interstitial damage.

Postrenal — obstruction of the urinary out flow. The clinical picture of renal failure is specifically due to:

1. Decrease in glomerular filtration.
2. Loss of tubular function.
3. Loss of acid base balance.

It may be manifested by some or all of the following signs and symptoms:

1. General: headaches, weakness, dizziness, apathy which may progress to coma, visual disturbances, loss of weight and anemia.
2. Gastrointestinal: nausea, vomiting, diarrhea, anorexia and stomatitis.
3. Neuromuscular: twitching, hiccough and reflex changes.
4. Skin: itching, petechiae and uremic frost.

Acute Renal Failure

The two most common forms are acute glomerulonephritis and lower nephron nephrosis.

Lower Nephron Nephrosis

This condition is a focal degeneration and necrosis of the ascending limb of Henle's loop and the distal convoluted tubule, although occasionally the proximal convoluted tubule will also be involved, whereas the glomerulus is intact. The syndrome is precipitated by shock, sulfonamides, crush syndrome, intravascular hemolysis, transuretheral resections and postoperative urinary suppression, hepatic failure and acute febrile diseases, especially those associated with great dehydration.

These etiologic factors are associated with either prolonged collapse or mechanical obstruction.

1. The obstructive form is encountered in sulfonamide precipitation within the tubules by an acid, diminished urine.
2. The tubular dysfunction form is the end result of the ischemic process which is believed to produce total reabsorption by the tubules.

It seems that damage to the tubular walls destroys the specific reabsorption which takes place in the normal tubule. The glomerulus forms an ultrafiltrate normally, but during the passage through the damaged or necrotic tubules all the glomerular filtrate is reabsorbed, because the tubular epithelium has been transformed into a nonspecific dialyzing membrane. The colloid osmotic pressure of the circulating plasma proteins draws all the water present in the lumen of the necrotic tubules back into the blood stream with resultant anuria.

Clinical Picture

There are three clinical phases in lower nephron nephrosis:

I. The period of initial injury to the kidney associated with hypotension, vascular collapse or mechanical precipitation of intratubular crystals.

II. The onset of oliguria or anuria, and if uncontrolled, the appearance of clinical and laboratory evidence of uremia, and possibly other electrolyte imbalances, such as hyperchloremia, hypernatremia and hyperkalemia.

III. The recovery phase with the onset of progressive diuresis, during which there is polyuria with hyposthenuric urine, which may lead to excessive loss of sodium and chloride, and water.

Treatment

I. First Phase

The initial step is the restoration of normal blood volume and blood pressure — prophylaxis. Early alkalinization of the urine is usually recommended. BAL (British antilewisite) may be used in heavy metal poisoning. Treatment with antibiotics other than sulfonamides depends on specific causes.

II. Second Phase

A. Nutrition is maintained with a high caloric, high vitamin diet designed to reduce the endogenous protein breakdown to a minimum, thereby preventing any undue elevation of the nonprotein nitrogen. Borst suggested a diet of 200 Gm. of sugar and 200 Gm. of butter as an ideal daily intake. Unfortunately, as might be anticipated, this diet is wholly unpalatable and causes nausea and vomiting. It provides approximately 2,250 calories and only 1.5 Gm. of protein.

B. Fluid balance constitutes the replacement of not more than the total daily fluid loss — insensible loss (fever, dyspnea), loss in stool and urine, and loss in vomitus. The total daily requirement varies between 750 and 1,500 cc. depending upon

the body weight, climate, season and presence of those factors which aggravate the insensible fluid loss. Changes in weight are a good index of the fluid balance.

It should be remembered that foods have a water of oxidation, being roughly 1.0 Gm. of water from each gram of fat, and 0.5 Gm. of water from each gram of carbohydrate or protein. The Borst diet carries approximately 30 cc. of water, but its water of oxidation amounts to approximately 300 cc. of water. It seems that this failure to restrict fluids is the largest single cause of death in lower nephron nephrosis, and therefore, it would appear to be a wise practice to restrict fluids whenever there is any doubt as to the cause of anuria.

C. Electrolyte balance resolves itself into frequent checks upon the serum levels of sodium, potassium, chlorine, the hematocrit reading and the alkali reserve (CO_2 combining power). It is no doubt apparent that there will be no loss of these electrolytes except through disturbances in the gastrointestinal tract, such as vomiting and diarrhea, or by excessive sweating. Insensible perspiration carries only negligible electrolytes with it. It must be borne in mind, however, that there is an inevitable endogenous breakdown of protein from the body from which potassium will be freed into the blood stream and will elevate it beyond its normal 4 to 5 milliequivalents per liter, to levels at which the hyperpotassemic syndrome manifests itself with the onset of:

1. Listlessness and mental confusion.
2. Numbness and tingling of the extremities with a sense of weakness and heaviness of the legs.
3. Cold gray pallor.
4. Peripheral vascular collapse.

The electrocardiogram affords a relatively early indication of hyperpotassemia, which first shows its toxic effect upon the myocardium at around 6 milliequivalents and progresses to complete heart block when it has risen to 10 milliequivalents or above. The progressive electrocardiographic changes are:

1. Peaked T waves (increased vertical amplitude and a narrowed base).
2. Increase in the amplitude of R and S waves.
3. The appearance of auriculoventricular and intraventricular blocks.
4. The loss of P waves—auricular standstill.
5. Depression of the S-T segment, and the T wave originates directly from the S wave.
6. The QRS and T waves become smooth biphasic curves due to the progressive delay in ventricular conduction.
7. The total arrhythmia with cardiac arrest in diastole.

The prevention of hyperpotassemia of course is a function of the dietary management, not only by giving a low protein diet, which is in itself a low potassium diet, but by preventing the undue breakdown of the body proteins which liberate approximately 2.5 Gm. of potassium for every gram of nitrogen that is released. When excess potassium accumulates in the blood stream, however, it is imperative to treat the condition actively to avoid the dangerous cardiac dysfunction.

It has been shown that calcium combats the toxic effects of potassium and tends to increase the frequency of ventricular contractions. Its effectiveness, however, is less than a similar use of sodium. It would appear that there is a rough reciprocal relationship between sodium and potassium and that the use of parenteral or oral sodium will correct or reduce the manifestations of hyperpotassemia. Desoxycorticosterone is also said to reverse the effects of potassium toxicity and to prolong life. The danger, however, of giving sodium in the presence of anuria is most apparent, but in those instances in which there is a concurrent hyponatremia, the use of sodium is positively indicated.

Other clinical subterfuges have been suggested:

1. Testosterone is thought to effect the positive nitrogen and potassium balance by a retention of these elements within the cells, thus preventing their rapid release into the extracellular fluids.
2. With regard to glucose and insulin, it has been demonstrated that potassium is carried out of the extracellular fluid into certain of the tissues by the process of glycogenesis. This form of therapy is said to be one of the most consistent and reliable methods of controlling hyperpotassemia.
3. The use of the artificial kidney and methods of large and small bowel irrigations are reportedly most efficient, but require frequent assessment of the serum electrolyte levels to prevent their excessive reduction.
4. It is of interest that the gastric secretions may rise as high as 40 milliequivalents (eight times that of the serum), and are normally reabsorbed through the intestine. Simple gastric suction might reduce the serum level of potassium, and permit easy assessment of the other electrolytes, which could be replaced with the fluid lost, after the method of the Mayo fluid balance team.

III. Third Phase

During the recovery phase there is a progressive polyuria associated with a loss of electrolytes which would tend to create fluid and electrolyte deficiencies, the reverse of those occurring in the second phase. They are, of course, corrected by suitable replacement therapy.

Treatment then is essentially the maintenance of homeostasis during the 5 to 10 day period in which the tubules begin to regenerate, and during a similar period of recovery. That recovery is possible is due to the fact that the tubules are of epithelial origin and are capable of regeneration without scarring, whereas glomeruli, which are mesenchymal in origin, are incapable of regeneration and, following comparable damage, progress to scarring and hyalinization. The acute phase of glomerulonephritis may produce a similar anuric picture, but of course, with recovery, there will be glomerular lesions.

In most cases of lower nephron nephrosis the patient will recover provided:

A. The circulation is not overloaded by excessive fluid intake.
B. The nutrition is maintained in such a way that there is no undue accumulation of toxic metabolic products.

Chronic Renal Failure

The presence of chronic renal disease, such as chronic glomerulonephritis and chronic pyelonephritis, leads to a progressive loss of function, and like the heart, the kidney ultimately decompensates, and renal insufficiency appears. This usually occurs when the glomerular filtration surface is reduced to approximately 60 per cent with a comparable failure in tubular function, which results in the inability to concentrate, and failure of the tubular power of reabsorption and secretion.

The reduced glomerular surface reduces the total glomerular filtration, but the failure to concentrate within the tubules results in polyuria, at least until the glomerular filtrate is reduced so low that the urinary output falls below 500 cc. daily, when a state of oliguria exists.

If the proximal segment fails to reabsorb its share of the glomerular filtrate, a large quantity of filtrate passes through the distal segment, and the resultant increased rate of flow reduces the time during which water reabsorption and concentration of the filtrate can occur. In consequence, urine volume increases and urine concentration diminishes. Anuria or oliguria appears when filtration ceases altogether, or becomes so small that reabsorption is almost complete.

With the reduced filtration there is a tendency to retain those products which are normally excreted in the urine. The extent to which the various substances are retained is proportional to the degree of their concentration in normal urine; that is, urea, which is normally concentrated some 70 times, is the first to be retained, creatinine, which is normally concentrated approximately 60 times, is the next to follow, and then uric acid, concentrated to approximately 30 times. Elements such as chloride, calcium and sodium, which are scarcely concentrated at all in normal urine, are the least affected and do not accumulate in the blood, while potassium, phosphate and sulfate occupy an intermediate place.

The retention of various products within the blood stream, chiefly the nonprotein nitrogens, is thought to be the cause of the physical signs and symptoms of uremia.

Retained Products

I. Urea

Urea is produced from the breakdown of either protein ingested or constituents of the body tissues, and is the first to rise in the serum with renal insufficiency. It is also the easiest and most reliable index of retention. There is little or no parallelism, however, between the level of urea and the uremic symptoms. Experimental evidence shows that the amount of urea encountered in patients with uremia is insufficient to produce a primary toxic action and that relatively large amounts are required to produce similar symptoms. The excretion of urea through the gastrointestinal tract is broken down by bacterial action to form ammonia which causes gastritis, enteritis and colitis, with resultant vomiting, diarrhea and the uremic odor.

Urease in the saliva also reduces the urea to ammonia within the buccal cavity and results in stomatitis. Its excretion in the sweat becomes apparent as uremic frost.

II. Creatinine

Creatinine is derived from the breakdown of creatine, and rises later in the blood stream, not only because of its lesser concentration, but also because of its partial excretion through the tubules. An elevation of the serum creatinine is therefore an index of more profound damage than that encountered with elevation of urea alone. Creatinine is associated with muscle metabolism, and during uremia there is evidence of muscle wasting.

III. Phenols

These substances are formed from the catabolism of the amino acids tyrosine, tryptophane and phenylalanine within the body and possibly absorbed from the gastrointestinal tract, where they are formed by bacterial action. Experimental elevation of the phenols produces uremic symptoms, especially those of weakness, apathy, disorientation, stupor and coma, during which time it has been noted that the cerebrospinal fluid level is also elevated.

Bone marrow studies were carried out in cases of renal disease by Callen and Limarzi, who found that in most of the patients with chronic nephritis the bone marrow was hypercellular, involving the myeloid and megakaryocytic cells. They noted that erythroid hyperplasia occurred only when the nonprotein nitrogens rose above 150 mg. per hundred cubic centimeters. They concluded that the anemia of azotemia is likely due to a chronic toxic inhibiting effect on the bone marrow, and that the degree of anemia depends on the degree of azotemia. Other workers suggested these aromatic phenols have a depressing effect on the bone marrow which may produce a hypoplastic bone marrow or maturation arrest, resulting in anemia and platelet reduction which causes the hemorrhagic tendencies often observed in patients with uremia. In the opinion of others, absorption of iron from the gastrointestinal tract is depressed and is responsible for the anemia.

IV. Guanidine

Guanidine, believed to be an antagonist of calcium, has been shown to produce gastrointestinal effects, such as nausea, vomiting and diarrhea, at low levels, and neuromuscular symptoms such as muscle twitching at high levels of serum guanidine. In spite of the fact, however, that guanidine produces a picture almost identical with that of uremia, the doses required to produce the picture in dogs are considerably higher than the levels found in humans with comparable symptoms.

Polyuria

The onset of polyuria with early renal insufficiency has been shown to be due to glomerular-tubular imbalance. Some, however, believe that the inability of the kidney to produce hypertonic urine elicits a compensating increase in the volume of urine so that the total quantity of solids excreted does not fall. Others believe it to be incidental rather than corrective. Nevertheless, it is fortunate that polyuria does occur in order to prevent further reabsorption of the toxic metabolites through the defective tubules.

It has been shown that on a sharply restricted fluid intake kidneys with a normal function can excrete 15 Gm. of solids in 250 cc. of urine, whereas with a poor kidney on a restricted intake only 5 Gm. of solids can be excreted in 1,000 cc., of which 750 cc. must be drawn from the extracellular fluids and would rapidly produce dehydration, if not checked.

The same impaired kidney on a high fluid intake can excrete 15 Gm. of solids in 2,000 cc. of urine, without any retention of solids or dehydration, that is, the impaired kidney requires almost 10 times the amount of urine water required by the normal kidney to excrete an equal amount of metabolic waste material.

It has been shown that the maximum specific gravity obtained in the presence of dehydration or oliguria or by concentration test is a close clinical index of the amount of urine water required to eliminate a given amount of solids, for example 40 Gm., the daily average excretion.

Specific Gravity	Minimum Urine Water	Optimum Urine Water
1030	500	1,500
1015	1,500	2,500
1010	2,000	3,000

If the minimum amount of water is not available, the extracellular fluids are drawn upon; dehydration ultimately occurs, defeating the advantage of the polyuria, and the solids are retained.

Needless to say, this polyuria, which reflects the tubular dysfunction, also has its disadvantage, namely, the loss of essential electrolytes, which under normal circumstances would have been reabsorbed.

I. Sodium

Glomerular-tubular imbalance with tubular diuresis shortens the time of contact between the filtrate and the tubule cells in the proximal and distal segments in which sodium conservation is usually effected, with a resultant inadequate sodium reabsorption. This is further aggravated by failure of the mechanism of the renal acid base balance, which normally substitutes ammonium and hydrogen for sodium in the distal tubules. The loss of sodium is accompanied by a loss of chloride ions, as well as bicarbonate ions which are the volatile ionic fillers in the acid base balance.

The loss of salt over a long period of time, or a shorter period of time if anorexic and gastrointestinal disturbances are present, results in hyponatremia and hypochloremia, which are manifested as the low salt syndrome:

A. Lassitude, weakness, headache and anorexia.

B. Apathy, light headedness, nausea and vomiting, and abdominal or muscle cramps.

C. Stupor, fall in blood pressure, with syncopal attacks, tachycardia and shocklike state.

It is noteworthy that in spite of water loss which proceeds to dehydration and oliguria, there is an absence of thirst.

The hypochloremic state is also manifested by a depression in hydrochloric acid formation in the stomach. Schroeder believed that the serum concentration of sodium and chlorine is associated with the ability of the kidneys to excrete nitrogen, and that hyponatremia and hypochloremia cause a decreased renal blood flow with increased retention of nitrogenous products — so-called "hypochloremic uremia."

Normally the strongly acid metabolites, the sulfates and phosphates, which are derived from the breakdown of phospholipids and protein, are neutralized within the body by sodium derived from the body sodium bicarbonate and from dibasic sodium phosphate, and then within the kidney tubules the sodium is reabsorbed and replaced by ammonium or hydrogen according to the ionic exchange mechanism described by Smith.

With renal insufficiency not only does the ionic exchange mechanism fail because the tubule function is lost with a resultant loss of body base, but there is a retention of these acid radicles which ultimately exhaust the phosphate and bicarbonate buffer systems, and the patient becomes acidotic.

II. Potassium

Potassium is normally reabsorbed most efficiently by the renal tubules, and as the reabsorption power diminishes, it is usually balanced by a reduced filtration. Although potassium is excreted in the urine roughly in proportion to the volume of urine, the loss is adequately balanced by the excessive dietary intake. As anorexia and reduced food intake occur, however, there is a relatively slow, but progressive, loss of potassium ion from the body depending upon the degree of polyuria. With the onset of vomiting and/or diarrhea potassium is lost rapidly, and the syndrome of hypopotassemia appears:

Weakness and hypotonicity of:

A. Skeletal muscles leading to flaccid paralysis.

B. Respiratory muscles producing dyspnea and cyanosis.

C. Gastrointestinal musculature with abdominal distention, nausea and vomiting.

D. Myocardium with dilatation and failure.

The influence upon the myocardium may be determined by the electrocardiographic changes:

A. Prolongation of the QT interval.
B. Lowering of the T waves and possible inversion.
C. Prolongation of the T waves.
D. Depression of the S-T segment.
E. Possible inversion of the P waves.
F. Extra systoles and auriculoventricular block.

There is apparently only approximate parallelism between the cardiac effect and the degree of hypopotassemia, and therefore, it is wise to be on the lookout for the syndrome as considerable cardiac damage may be inflicted by only a moderate depression of the potassium level.

III. Calcium and Phosphorus

The loss of calcium associated with the polyuria tends to reduce the level of ionized serum calcium, unless there is an adequate intake of calcium in the food. The onset of uremic gastrointestinal signs will result in depression of the intake and cause a hypocalcemia. Some workers believe that there is a failure of the intestinal wall to respond to vitamin D during uremia, with a consequent failure of calcium absorption. There is usually a higher dietary intake of phosphorus than of calcium, and it is thought that the absorption of calcium may also fall because of the precipitation of calcium phosphates.

The rough reciprocal relationship which exists between phosphorus and calcium tends to be reversed in uremia, not only because of the reduced calcium absorption, but also because of the increase of inorganic phosphates associated with endogenous tissue breakdown. The reversal of the phosphorus-calcium ratio in renal insufficiency is thought to stimulate parathyroid hyperplasia and the production of increased amounts of parathormone in order to mobilize calcium from the bone and to correct the hypocalcemia — the mechanism also believed to exist in "renal rickets." It has not been adequately demonstrated, however, that there is any increase in parathormone in uremia, and the form of hyperplasia is different from that seen in primary hyperparathyroidism, involving the "water-clear" cells rather than the "chief" cells. Others believe that the acidosis of uremia is responsible for the calcium mobilization from the bone. The presence of hypocalcemia is believed to cause the muscular twitching observed in patients with uremia. Some workers have demonstrated that there is an increased inorganic phosphate encountered in the cerebrospinal fluid of dogs showing uremic muscle twitching, but it has also been demonstrated that there is a corresponding decrease of calcium in the cerebrospinal fluid.

Experimental hypocalcemia has been shown to have a stimulating influence upon the central nervous system, which may be reversed by the intravenous injection of calcium salt, or by the antagonism of aromatic phenols. Guanidine is also thought to be an antagonist of calcium. The muscular twitching in human subjects with uremia has also been relieved by parenteral calcium.

It would appear then that the neuromuscular disorders of uremia are due to the unbalanced antagonism of a low serum calcium to elevated levels of phenols and/or guanidine.

This condition may be prevented by the ingestion of adequate calcium, and a regimen of aluminum hydroxide which precipitates the phosphates ingested in an insoluble form within the intestinal tract.

Treatment of Chronic Renal Insufficiency

It would appear from these arguments that the management of chronic renal insufficiency depends upon the maintenance of a high urinary output, the prevention of toxic metabolite retention and the replacement of the excessive loss of electrolytes in the urine.

I. Fluids

The criterion of adequate fluid intake is a urinary output sufficent to excrete the nonprotein nitrogen metabolic products without any residual retention in the blood stream. The required urinary output may be deter-

mined by the serial estimations of the blood urea nitrogen, or by reference to the scale of optimum urinary outputs related to the specific gravity given previously.

II. Nutrition

An adequate caloric intake is required, best given in a high carbohydrate, moderate fat, low protein diet, the protein being sufficient to meet the body's anabolic demands. This will be approximately 1 Gm. of protein per kilogram of body weight. Such a diet will automatically provide a neutral or even alkaline ash. It will also reduce the amount of excessive protein breakdown products, that is, the nonprotein nitrogens, thereby reducing the required quantity of urine water for their excretion. In other words it allows the kidney to compensate on a lower volume of urine.

III. Electrolyte Replacement

No restriction must be placed on the intake of sodium chloride or calcium-containing foods. The latter should be facilitated with vitamin D supplements and doses of aluminum hydroxide with each meal, for example, in milk.

In the presence of congestive failure, however, emphasis must be placed upon the treatment of the cardiac decompensation and great care taken in the administration of sodium.

Patients with pronounced polyuria may be benefited by a supplement of sodium chloride, for example, 1 Gm. of enteric-coated sodium chloride three times a day. When acidosis exists, an addition of 1 to 2 Gm. of sodium bicarbonate three times a day will assist materially.

IV. Complications

If these general rules of management are adhered to, the more disturbing manifestations of uremia, particularly the gastrointestinal disturbances which lead to the various electrolyte imbalances, may be avoided. When electrolyte imbalances occur, the degree of deficiency of each electrolyte should be determined and accurate replacement therapy instituted accordingly.

Nausea, vomiting and diarrhea must be combated aggressively and sufficient parenteral fluids and electrolytes given parenterally to ensure elimination of the retained products believed to be the cause of these disturbances.

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ABSTRACTS OF MEDICAL ARTICLES

Glaucoma Following Occlusion of Central Retinal Artery. By Curtis D. Benton Jr., M.D., A. M. A. Arch. Ophth. 49:280-284 (March) 1953.

Two cases are reported in which a sudden severe unilateral glaucoma developed a few weeks after occlusion of the central retinal artery in the affected eye. The clinical features in these cases parallel in many aspects those of glaucoma following occlusion of the central vein. Pathologic findings in the one eye that was enucleated are described. A fibrovascular peripheral anterior synechia, similar to, but less extensive than, that found in hemorrhagic glaucoma following occlusion of the central retinal vein is found in the iridocorneal angle. This clinical picture is of extremely rare occurrence; there have been no reports of the condition since 1930, and current textbooks seldom make mention of it. The remarkably consistent findings, however, in these and previously reported cases justify its inclusion with the secondary glaucomas in the author's opinion.

The Effect of Age on the Carbonic Anhydrase Activity of Bovine Lenses. By Theobald Reich, M.D., and Raymond W. Healy, M.D. Am. J. Ophth. 36:500-503 (April) 1953.

How age affects noncataractous lenses with regard to their carbonic anhydrase activity had not been investigated until an investigation was made which is here reported. This study was undertaken in an attempt to supply this information on the basis of carbonic anhydrase activity determinations of young, adult and old bovine lenses.

In determining the carbonic anhydrase activity of homogenates prepared from these noncataractous bovine lenses, a modification of the colorimetric procedure of Trethewie and Day was used. It was concluded that the process of aging did not alter the carbonic anhydrase activity of bovine lenses significantly.

Use of the Plastic Intravenous Catheter for Multiple and Massive Transfusions and Prolonged Intravenous Fluid Therapy. By Donald W. Smith, M.D., F.A.C.S., R. S. Sappenfield, M.D., and W. J. Fink, M.D. Surg., Gynec. & Obst. 95:775-777 (Dec.) 1952.

With the increasing use of massive and multiple blood transfusions and parenteral fluid therapy, improved methods for their rapid and continuous administration are necessary. The authors are of the opinion that the plastic intravenous catheter helps to meet these requirements, but that it has not been as generally employed as is justified. It is their purpose in this paper to review the indications and advantages of the intravenous catheter and briefly to describe the methods of its insertion.

They believe that this valuable adjunct to the success of rapid, massive, and multiple transfusions and continuous intravenous fluid therapy should be immediately available for use as an essential component of the expendable and nonexpendable transfusion administration equipment. Regarded as most suitable for universal use is the previously sterilized polyethylene or polyvinyl plastic intravenous catheter of proper gauge and length, sealed in a glass tube containing 1:1,000 zephiran solution.

Modified Suprapubic Prostatectomy. By Edwin W. Brown, M.D. South. M. J. 46:689-691 (July) 1953.

The operative technic described depicts a combination of the suprapubic and retropubic approach to enucleation of the prostatic adenoma.

A series of cases is reported in which carcinoma was demonstrated microscopically in 18 per cent, and in 27 per cent calculi were present in the bladder at the time of operation. The mortality rate was 3.7 per cent.

Rectal Paraldehyde, a Basal Anesthetic for Children. By Stanley H. Axelrod, M.D., and Charles Stein, M.D. South. M. J. 46:670-672 (July) 1953.

The need for basal anesthesia in children is discussed, and the criteria of a good basal anesthetic agent are presented. Paraldehyde is compared with other basal anesthetics, and its advantages are discussed.

In a series of 87 cases the patients were children ranging in age from 22 months to 11 years and weighing from 21 to 102 pounds. They were all admitted to the pediatric service for surgical procedures of all types but predominantly for tonsillectomy and adenoidectomy. The results in these cases indicate the desired hypnotic effect can be produced by rectal paraldehyde in the majority of patients with a wide margin of safety and without serious complications. It is concluded that paraldehyde as a basal anesthetic deserves renewed interest and popularity.

Correction of Funnel Chest Deformity. By John G. Chesney, M.D., and DeWitt C. Daughtry, M.D. South. M. J. 46:636-639 (July) 1953.

The lesion of funnel chest, its etiology and symptoms, and the indications for and the problems of repair are discussed. The authors believe that when correction is needed, it should be by the more radical technic. Return to essentially normal chest form may be attained by subperichondrial resection of all deformed segments of costal cartilage, division of the xiphisternal attachments and adjacent attachments of costal arch to diaphragm, together wth freeing of the posterior surface of the sternum and high sternal osteotomy. Skeletal traction, utilizing an external bridge, is applied for ten days.

The need for endotracheal anesthesia leads to the conclusion that two and one-half years is the ideal age for intervention, earlier operation being feasible if necessary. Since generalized flattening and asymmetry become well established at about age four, correction should be made before this age, though sternal depression itself is amenable to treatment in adult life.

Simple freeing of xiphisternal attachments and adjacent costal arch from the diaphragm in infants as young as three months of age is not in the opinion of the authors a satisfactory substitute for the more radical procedure.

Proctology Twenty Years Ago and Now. By John Cheleden, M.D. South. M. J. 46:673-678 (July) 1953.

This article reviews briefly the progress of the specialty of proctology, especially during the last 20 years. The scope of the discussion is indicated by the following subheads: anatomy; asepsis, antisepsis, wound healing; anus; hemorrhoids, structure, plastic procedures; pruritus ani; pilonidal cysts; venereal lymphogranuloma; prolonged injectable anesthetics; colon; ulcerative colitis; congenital anomalies; polyps; intussusception; diverticulosis, diverticulitis; carcinoma of the large bowel; diagnosis, examination, referred symptoms.

Tribute is paid to the Section on Proctology of the Southern Medical Association and its role in the dissemination of knowledge pertaining to the specialty, the occasion marking the fifteenth anniversary of its founding.

External Otitis. By Henry E. Branca, M.D. A. M. A. Arch. Otolaryng. 57:310-327 (March) 1953.

Observing that rational therapy is possible only if the clinical picture is more thoroughly understood, the author stresses the need for a more profound study of the clinical appearance of external otitis. He discusses its frequency, age incidence, climatic and geographic aspects, the clinical picture with the variability of the disease in the same patient, the fallacy of trying to divide the disease into separate clinical entities, the nature of the drainage and its diagnostic importance, the frequency of drug sensitivity and its recognition, the cerumen and its theoretic analysis, and the theoretic possibilities. He considers external otitis as primarily an eczema, which is clinically obscured by secondary invaders, and states the theory of neurogenic atrophy of the ceruminous glands.

Despite all the "new therapies," this disease remains a challenge to the otologist, he notes, and states that the present concepts are based on the belief that bacteria are the chief etiologic factors in this disease with fungus as an etiologic agent losing support. The use of the antibiotics, he finds, may indirectly demonstrate the cause of external otitis. Consideration is given to the application of the commonly known therapeutic measures. Conclusions are drawn concerning bacterial

external otitis, otomycosis, and mixed infections, and the difficulty in finding the offending fungus is noted.

Fifteen cases are presented which encompass well all the varied features of the disease.

Change in Electrolytes in a Case of Parathion Poisoning. By Jere W. Annis, M.D., and John W. Williams, M.D. J. A. M. A. 152:594-595 (June 13) 1953.

In reporting a case of severe acute parathion poisoning the authors desired to make known the observed changes in the serum pH and calcium, phosphorus, and potassium levels in the hope of stimulating follow-up studies in order to determine whether the changes in pH and electrolyte concentration are as determinant of the variations in symptoms, the severity of poisoning, and the prognosis as are the changes in the cholinesterase levels of the plasma and cells. They also wished to report the hitherto unreported residual manifestations affecting the central nervous system resulting from anoxia, prolonged unconsciousness, convulsive seizures, electrolytic and pH shifts, and/or severe cholinesterase depression so that these manifestations may serve as a warning of the potential toxic effects of the chemical in nonfatal cases.

They attributed recovery in part to more adequate amounts of blood used and believed these transfusions resulted in the relatively rapid rise in the cholinesterase activity from an extremely low level. Also, they emphasized the advisability of early treatment in parathion poisoning and suggested administration of infusions containing properly adjusted and adequate amounts of calcium and sodium bicarbonate. In addition, they stressed the importance of scrupulous adherence to safety measures and technics in the use of this chemical. While they postulated no new mechanism for the symptomatology of parathion poisoning, they mentioned the possibility that mechanisms do exist in addition to those which have already received attention. Their observations on the electrolytic changes, especially the reversal of the calcium-phosphorus ratio and the prolonged elevation of the potassium level, seem to indicate the possibility of a somewhat different approach to an inadequately understood problem.

Program of Tuberculosis Control in Recent Years. By C. M. Sharp, M.D. South. M. J. 46:695-701 (July) 1953.

Pointing out that steady decrease in tuberculosis death rates in all states has been misleading to the uninformed, Dr. Sharp notes that the tuberculosis problem is by no means completely reflected in death rates. Because of the extraordinary advances in treatment, he depicts tuberculosis as an ever present challenge to the medical and public health professions and their training schools.

Readily subject to prevention and control, this disease remains the most significant chronic fatal disease and carries a higher mortality rate than for any other infectious disease, causing more deaths among young adults than all other diseases combined. It receives too little attention, he contends, in view of its high importance as a preventable disease.

In discussing mass chest x-ray surveys, he mentions examination of 2,024,250 persons by photofluorographic methods in Florida from 1946 through 1951, revealing 23,274 suspicious cases, and on further study 7,489 significant cases. He also discusses the value of culture procedures used routinely in Florida over the use of smear alone, the need for adequate treatment facilities, the phenomenal development of surgery for tuberculosis during the past few years, drug therapy including the use of newer drugs, and the importance of early diagnosis and treatment.

Among defects in tuberculosis control programs he names the shortage of public health nurses and hospital beds and personnel, the need for greater public health education regarding this disease, the seriousness of departure of patients from hospitals against medical advice, and the lack of adequate facilities to solve severe socioeconomic problems.

Despite the many obstacles, Dr. Sharp calls for intensification of the tuberculosis program in view of the encouragement arising from the 50 per cent decrease in the death rates in many sections of the South in the past 10 years and the fact that more persons ill with tuberculosis may be treated than ever before with an excellent chance for recovery.

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From Our President

New Year Greetings

The activities of 1954 begin, in all component medical societies of the Florida Medical Association, under new leadership. To all of you who may be responsible for the carrying out of the functions of a county society I wish to extend greetings for the New Year, and my best wishes for your success. Early organization of your society, the designation of specific functions to officers and committees, and an earnest desire to become thoroughly familiar with your duties and responsibilities will make your term of office less burdensome and productive of better end results.

The central office of the Florida Medical Association and its staff in Jacksonville, and the officers of the Association, stand ready to help you whenever possible. For specific problems, not organizational, its standing committees are also available for consultation with you and for study of your problems.

After eight months in the office of your state president I am becoming increasingly aware of the importance of functioning medical societies in the general practice of medicine. Your officers on the state level, and your Board of Governors, exercise direction over general activities of the Association. Much of the decisive and important actions of organized medicine, and of its influence on the laity, depends in large part on the interest and activity of the county medical society and its member physicians.

Actions on the top level fail if you do not do your part at the county society level. No amount of enthusiasm at the top level can compensate for lack of enthusiasm or lack of cooperation on your level of activity.

To each physician of the Association I extend my best wishes for the New Year, my congratulations and thanks for what you have accomplished during 1953, and my hope that we in Florida will see an increasing interest in the affairs of medicine in 1954.

Frederick K. Herpel

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Suburbia 1954 Lures Physicians

Moving out, Doctor? Many physicians practicing in urban areas are experiencing the urge to escape from the congested downtown districts to the currently popular residential centers or even to the far flung suburbs. In increasing numbers they are following their colleagues who have already yielded to this urge. Here, there and yonder, where formerly one would least expect to see them, modernistic office buildings and clinics meet the eye in or near neighborhood shopping centers.

Standing irresolutely on a busy downtown street corner the other day, a disconsolate businessman replied to a solicitous inquiry: "Why wouldn't I look glum? Just look at this inflamed eye. And I take my lunch hour to go across the street to my eye doctor only to find he has moved to Five Points, two miles out. Now I will have to get my car and drive clear out there."

"The ladies have to have a place to park," was the somewhat facetious rejoinder.

"Do you think women only get sick?" he inquired petulantly.

Yes, the annoyed business man was the victim of a trend. The wonder was that his doctor had not moved more than two miles out. The parade of the picture windows is luring even the physician to fall in line. Where is the city today whose adjacent fields are not surrendering to the onslaught of Suburbia 1954 as they did in 1953? The landscape is being transformed by mushrooming houses, row upon row, some in replica, others of variegated design and finish, but all displaying the badge of Suburbia, the picture window.

This flight to the outskirts is a significant social factor of the times. The movement is worldwide, but particularly in this country suburban populations are increasing by leaps and bounds. During the last quarter of a century the population of the United States has increased by 25 per cent, but the truly rural population has decreased, and the population of cities proper has barely held its own with the general increase. In suburban areas, villages and small towns, however, the population has increased by 75 per cent.

Vital statistics furnish one of the reasons for this shift. The birth rate, increasing in customary fashion at the end of the last war, has not declined as expected although the number of marriages has. It has become the vogue with present day couples to have more children. The average family of 1953, compared with its counterpart in 1929, had one third more first children and two thirds more subsequent children.

Redistribution of income is another major stimulus to suburban growth. The artisan's wage today approximates that of the professional man of 25 years ago. The craftsman and his wife have about as much money to spend as their white collar neighbors. They read the same periodicals, hear and see the same radio and television programs and share more or less the same tastes. They, too, like suburban homes with picture windows.

Other factors which have brought accretions to the suburbs reflect the progress of education and the mechanization of industry, which have reduced the ranks of manual laborers. Too, social security and pensions have created a new class of nonworking residents or part time workers able to own their own homes, many of whom prefer the suburbs to the confinements of the city.

For the convenience of suburbanites the grocer, the pharmacist and others who serve the public have trailed them to easily accessible locations. Doubtless more and more physicians, too, will follow the trend during 1954, finding it both practical and convenient to abandon congested downtown areas and invade the suburbs.

"Doctor Draft Law" Clarifications

Of wide interest is the recent directive of the Defense Department containing new regulations which modify and consolidate earlier directives under the "Doctor Draft Law" (Public Law 779, 81st Congress). Professional standards of special registrants (medical) are more clearly defined. To be professionally acceptable, a special registrant must be (1) a graduate of an approved medical school or of a foreign medical school whose graduates are recommended for consideration by the Council on Medical Education and Hospitals of the American Medical Association; (2) a graduate of any other medical school who has an M.D. degree after completing a four year medical course providing he has had 12 months of approved intern or residency training or is a diplomate of an American specialty board and is licensed to practice medicine in any state or territory of the United States, or is a diplomate of the National Board of Examiners.[1]

The law itself requires the appointment, reappointment, or promotion to a grade "commensurate with professional education, experience or ability." The assignment of rank will be based upon the number of years spent in appropriate professional activities subsequent to medical school graduation and prior to date of appointment. The directive states, however, that promotions must be given "at the earliest practicable date." As in the past, men who have less than four years' professional experience since graduation are entitled to a first lieutenant's commission; those who have less than 10 years, captain; less than 18, major; and 18 or more, lieutenant colonel. Navy grades are comparable. For reserve officers not on active duty, there will be no change in grade; the regulations provide, however, that the higher grade must be given them if they are called back for service.

Physicians registered under the regular draft as well as the doctor draft may now accept a commission and await their call. Formerly, these men could choose between taking a reserve commission and volunteering for immediate active duty or run the risk of being inducted as privates through regular draft channels. The fact that the services have no immediate need for more physicians accounts in part for this change. The new regulations provide that medical officers who joined National Guard or Air National Guard units after June 25, 1950 may be called on an individual basis before their unit is called. This policy has been in effect since last July.

Although the wording differs somewhat regarding physical standards for physicians, the basic principle remains the same. The directive declares: "All physicians . . . are considered to be potentially acceptable for military service provided they can reasonably be expected to be productive in the Armed Forces. . . . No person with limited physicial capabilities will be assigned by the military departments to duties which are beyond the limitations imposed by their physical capabilities."[2]

1. AMA News Notes 2:1 (Nov.) 1953.
2. J. A. M. A. 153:11A (Oct. 24) 1953.

Four Medical Bills Rated Important at Next Session of Congress

A representative group of Senators and Representatives regard four issues of significance to the medical profession among the more important questions to come before the next session of the 83rd Congress. Divided about evenly between the two partes, 186 Representatives and 39 Senators participated in a poll to sound out the lawmakers' sentiment, conducted by the Congressional Quarterly, a factual news service devoted to reporting and analyzing Capitol Hill trends.

Forty subjects were submitted, with the request that they be graded in order of importance. First among the four medical issues was social security, which won sixth place in the poll. The question is whether or not 10.5 million persons, including physicians, shall be brought under social security coverage. This legislation was requested by President Eisenhower in the closing days of the last session of the Congress and will be pressed by the administration at the forthcoming session.

Tax legislation was rated ninth in importance. While the House Ways and Means Committee is working out a complete revamping of tax laws, the Jenkins-Keogh plan is of paramount importance to physicians. It would permit physicians and other self-employed persons to defer income tax payments on a portion of their income which would be put into restricted annuity programs, a privilege now accorded corporation employees. The American Medical Association strongly supports this plan.

In thirteenth place was aid to schools and hospitals. Couched in broad terms, this measure presumably would include aid to hospitals and clinics under a national health plan as well as support for the Hill-Burton hospital construction program.

Regarded as fifteenth in importance was veterans' services. Included would be the question of whether the Congress should expand or restrict care of nonservice-connected cases. The American Medical Association proposes that care be restricted to (1) service-connected cases, and (2) certain long term nonservice cases when the veteran himself cannot pay. In all other nonservice-connected cases, the responsibility would rest on the individual himself or the community.

With the Congress back in session this month, both the accuracy of this poll and the ultimate disposition of the proposed legislation will be of particular interest to physicians.

The Editor Invites Your Contributions on Data of Notable Interest

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Systems of Government Delightfully Defined

Public relations conferences have a way of running the gamut from vitriolic excoriations in politics to today's changing connotation of words. One speaker at the recent Public Relations Institute of the American Medical Association defined systems of government in delightfully novel terms. The enlightening outburst went something like this:

Idealism. If you have two cows, you milk them both, use all the milk you need, and have enough left for your neighbors.

Socialism. If you have two cows, you keep one and give the other to the man next door.

Communism. If you have two cows, you give both to the government; then the government gives you back a little milk.

Imperialism. If you have two cows, you steal somebody's bull.

Capitalism. If you have two cows, you sell one and buy a bull.

New Dealism. If you have two cows, the government shoots one; you milk the other, then dump half the milk down the sink.

Nazism. If you have two cows, the government shoots you and takes the cows.

Realism. If you have two cows, they're both dry.

Exploitation of Heartbreak Cases Damaging to American Medicine

More and more frequently lately, the public is being confronted with instances of exploitation of heartbreak cases by television, radio and newspapers. The subject of medically needy cases, especially those tearfully portrayed before television audiences, received thorough discussion recently during a public relations conference sponsored by the Medical Society of the State of New York.

The "heartbreak case" was described as one in which an appeal is made for funds through television, radio or press to pay for extensive medical care or an operation, the cost of which is overwhelming to the person involved. Investigation of many heartbreak cases, it was pointed out, has shown that the patients did not consult with hospital authorities or ask their county medical societies what could be done. They preferred instead "to glamorize their plight." The consensus

among the conference members was that exploitation under these unfortunate circumstances must stop.

"The patient must be informed," Dr. James D. Tyner of Newark told the conference, "that regardless of ability to pay he need only ask to receive the services of a doctor or hospital care. In these cases, the county medical society, state welfare department and voluntary health organizations are ready to help every deserving person.

"How many people know that doctors in wards and clinics of hospitals throughout America give their services daily without charge? The average doctor spends 12 per cent of his working hours doing charity work. The dollar value of the time given to charity patients by the average M.D. is more than $3,000 annually and his donation of time from 1947 to 1951 increased 15 per cent."

After pointing out that the social welfare laws of New York State make it mandatory upon the welfare district to provide necessary medical and hospital care for those persons unable to secure it, Dr. Tyner continued: "Physicians are already giving service to thousands of potential heartbreak cases in their everyday duties. We must let the people know this fact, and try to prevent the few cases that are dramatized from damaging the good name of American medicine."

The medical profession, not only of New York State but of every state, needs to put aside its traditional modesty and expose this sham. The public should be fully apprised of the profession's deep concern with the problem of adequate care for the medically indigent or those confronted with overwhelming medical expense. It should know what is being done daily the country over by physicians to cope with this problem.

How Long Can It Last?

Proverbially, figures do not lie. They do, however, raise grave questions at times and portend ill for the future.

In the 20 years just ended, for example, the government spent more than $775,000,000,000 and ran up a net deficit of more than $239,000,000,000. What happens next when your government spends in two decades almost half again as much as it was able to collect, despite steadily increasing taxes?

Back in 1933 the national debt was a fraction less than $180 for each American. Today the figure exceeds $2,000. A typical family of 1933 with a $4,000 annual income paid $44 in federal income taxes; now the sum approximates $500. Incredible as it may or may not seem with March 15 once more just around the corner, tax collections in the last fiscal year were 2,100 per cent greater than in 1933.[1]

Such thought-provoking figures on government spending deserve careful perusal. Certainly they raise questions grave indeed, chief among them: How long can any nation stand such a trend without going bankrupt?

1. Secretary's Letter, No. 271, American Medical Association, citing "It Cost You 775 Thousand Million Dollars" by Paul L. Martin, chief of the Washington Bureau of the Gannett newspapers, in the October issue of the American Mercury, pages 5 to 10.

"More 'U' In CommUnity" Rural Health Conference Theme

"Let's Put More 'U' In CommUnity" is to be the theme of the ninth National Conference on Rural Health, scheduled for March 4 to 6, 1954 at the Baker Hotel in Dallas, Texas. Leaders in the fields of medicine, agriculture, education and public health will be in attendance, and the principal subjects for discussion will be problems of nutrition and costs of medical care and methods of prepayment. A major feature of the program will be success stories by members of the audience. This meeting is sponsored by the Council on Rural Health of the American Medical Association, and will stress individual participation in community affairs.

As has been the custom for several years, a preconference session for physicians only will be held on Thursday morning, March 4. This session will deal with problems confronting physicians who are members of state rural health committees or committees handling rural health problems. Major subjects for consideration are physician participation at the grass roots and problems pertaining to health insurance matters.

This call for all-out community teamwork is just as applicable to urban as to rural health. There is continuing need everywhere for more 'U' in commUnity. More than ever today, the good citizen is part and parcel of his community, rendering it real service. In health matters particularly and in general community welfare, the physician everywhere has a golden opportunity through personal service to put more 'U,' and perchance also more 'Unity,' into his commUnity.

New Top Medical Official in Defense Department

Dr. Frank Brown Berry has been chosen to succeed Dr. Melvin A. Casberg shortly after the first of the year in the office of Assistant Secretary of Defense for health and medical affairs. Dr. Berry is a New York surgeon with military service in both World Wars. Professor of clinical surgery at Columbia University College of Physicians and Surgeons, Dr. Berry holds the rank of brigadier general, retired. In World War II he was on active duty for four years, from 1942 to 1946, and headed the 9th Evacuation Hospital in various parts of Europe. He has served as special consultant to the Army Surgeon General, for whom he made a special trip to Korea in 1951.

When he assumes office, Dr. Berry becomes the highest ranking medical official in the Defense Department. He is responsible for the operation and coordination of the Army, Navy and Air Force medical departments. He has direct contact with the three surgeons general. When the Secretary has approved his recommendations, they are transmitted to the three medical departments.

Dr. Casberg will return to the private practice of surgery in California.

Mental Health Milestone

A Conference on Mental Health, held in Washington last October, was a history-making event which augurs well for progress in coping with America's No. 1 health problem — mental illness. Sponsors of the conference were two of the oldest national medical organizations in North America, the American Medical Association, founded in 1847, and the American Psychiatric Association, founded in 1844 when 13 superintendents of hospitals for the insane met in Philadelphia.

The conference was of particular importance in that it marked the first time representatives of every medical and lay organization interested in the battle against mental illness had had an opportunity to face one another across the conference table and enter into friendly discussion of this major medical problem in a helpful atmosphere. More than 50 lay and medical organizations participated.

While most aspects of the mental health problem were discussed, the four major topics on which the discussion centered were: the educational process in training mental health workers, research, treatment, and prevention. Dr. Walter B. Martin, President-Elect of the American Medical Association, expressed the main objective of the two sponsoring organizations when he said: "There is a growing confidence in psychiatry and a mounting conviction that its principles need to be reintroduced into all phases of medical practice, to rehumanize medicine and, in this sense, return to medicine as a healing art. . . . This occasion may well mark the remarriage of partners, who should never have been divorced in the first place."

The conference proved highly successful, and it was left to the planning committee to decide whether it should be held annually.

Evolution of Osteopathy

Evolution Again. Somewhere in this issue of the Columbus Academy is an article which abstracts the report of the Committee for the Study of the Relations Between Osteopathy and Medicine, in which a Committee of able men led by John W. Cline, a former President of the American Medical Association, has devoted considerable time and study to the changes that have occurred in the field of osteopathy.

Osteopathy has undergone a process of evolution that has brought it to the point of such similarity to medicine that no marked fundamental differences exist between the two. The entrance requirements for schools of osteopathy and schools of medicine are identical. The curriculums have the same contents, except for the inclusion of the osteopathic theory, diagnosis and treatment. The period of instruction in both instances is four years. The clock hours devoted to teaching basic sciences, medicine and surgery are as great in schools of osteopathy as in schools of medicine. The level of instruction in basic sciences is demonstrated by the record of osteopathic candidates in examinations in these subjects. To illustrate the improvement in the caliber of instruction, it is interesting to note that in 1942, when 85.6% of the medical candidates passed basic science examinations, that only 55.4% of osteopathic candidates passed it. However, in 1952, 88% of the medical, and 84.5% of the osteopathic candidates passed the basic science examination. This is indeed, a remarkable improvement in caliber of instruction.

SOME TOP PERFORMERS. It is generally recognized by the Committee that the quality of instruction in medical schools is definitely superior to that of osteopathic schools. However, it reports that an acceptable, but unnamed source states that the performance of a considerable number of students graduated from the best osteopathic schools is now superior to that of some of the students graduated from some of our medical schools.

One of the most admirable features of the report of this Committee is the restatement of one of the major objectives and responsibilities of the American Medical Association, which is an avowed aim to improve the health and medical care of the American people. This report will demonstrate to the American people as a whole, and particularly to physicians, that this objective is not mere lip service or the proclaiming of high-sounding ideals. It gives tangible evidence that we are actively attempting to fulfill this objective.

There is no doubt that many physicians will have what they consider valid objections to the findings of the Committee. However, the delegation of action to the state boards, and the deliberate plan recommended by the Committee seem to me to be overwhelming evidence of the sound deliberation that is demonstrated throughout the report. Just as with time the distinction between homeopathy and allopathic medicine diminished to the point where now many of our modern medical students and physicians can no longer define the differences, so in time may the differences in osteopathy and medicine diminish; all to the ultimate benefit to the health of the American people. This is indeed, a process of educational evolution.

— G.J.H.

Reprinted from the Columbus (Ohio) Academy in the Bulletin of the Los Angeles County Medical Association, Los Angeles, Calif., Nov. 5, 1953.

Press-Radio-Television Conference

Under the sponsorship of the Florida Medical Association, a Code of Cooperation between Physicians-Hospitals and the Press-Radio-Television was drafted at a conference in Jacksonville on Nov. 14, 1953. The code is to be used as a guide for county medical societies to follow when developing a workable policy on medical news in their communities.

Dr. Edward Jelks, Public Relations Liaison to the Association's Board of Governors, presided. Dr. Frederick K. Herpel, president; Dr. Samuel M. Day, secretary-treasurer; Dr. John D. Milton, Board of Governors, and Dr. Henry L. Smith, Jr., member of the Public Relations Committee, also represented the Association. Mrs. Richard F. Stover, president-elect, spoke for the Association's Woman's Auxiliary.

Attending from the American Medical Association was Mr. John Bach, director of press relations, who presented a resume of successful codes being used in other states.

Mr. Jack Monahan, executive secretary, was present for the Florida Hospital Association. Mr. Robert Dow Jr., president of the Associated Press Association of Florida, represented the daily newspapers' managing editors, and Mr. Eugene L. Matthews, executive committee, Florida Press Association, spoke on behalf of the weekly newspapers. The Florida Association of Broadcasters was represented by Mr. Kenneth Small for radio and Mr. Bill Grove for television.

Speaking at the opening of the meeting, Dr. Herpel stated that he believes it a very encouraging sign that physicians and the press are alert to the importance of giving accurate medical information to the public. Therefore, the two groups should meet together so that physicians may learn the type of cooperation the press needs and the press the authoritative medical information only physicians are qualified to give.

Medical Officers Returned

Dr. George D. Hopkins II, who entered military service on Sept. 7, 1951, was released from active duty on Sept. 3, 1953 with the rank of captain (U.S. Army). His address is 104 Crescent Bldg., Fort Myers.

The Editor Invites Your Contributions on Data of Notable Interest

NEW MEMBERS

The following doctors have joined the State Association through their respective county medical societies.

Ayer, Orion T. (Col.), St. Petersburg
Collins, Cecil C. Jr., Jacksonville
Edwards, Ray O. Jr., Jacksonville
Ettinger, Charles D., South Miami
Fisher, John J., Jacksonville
Furman, Irvine K., Jacksonville
Hammond, Daniel O., Miami
Huth, Edgar W., Anna Maria
Johnson, Whedon, Sarasota
Kummer, William M., Lakeland
Messer, Addison L., St. Petersburg
Northup, Edwin C., St. Petersburg
Rosof, Jacob A., Hollywood
Rothermel, Robert E., St. Petersburg
Smith, Vernon L., Pensacola
Spindler, James F., Dunedin

BIRTHS AND DEATHS

Births

Dr. and Mrs. Solomon B. Goldman of Miami Beach announce the birth of a son, Howard Scott, on Oct. 10, 1953.

Dr. and Mrs. Chester Cassel of Miami announce the birth of a daughter, Laurie Gail, on Oct. 18, 1953.

Dr. and Mrs. Julian A. Rickles of Miami announce the birth of a son, Richard Samuel, on Oct. 20, 1953.

Dr. and Mrs. Thomas L. Roberts Jr. of Fort Lauderdale announce the birth of a daughter, Kathy.

Dr. and Mrs. George P. Beach of Daytona Beach announce the birth of a daughter.

Dr. and Mrs. Joseph C. Flynn of Daytona Beach announce the birth of a daughter.

Dr. and Mrs. Joel Mendelson of Daytona Beach announce the birth of a daughter.

Deaths — Members

Meister, A. George, Fayetteville, N. C.	Nov. 17, 1953
Broadbent, Oliver P., Jacksonville	Nov. 22, 1953

Deaths — Other Doctors

Rankin, Howard P., Cairo, Ga.	April 16, 1946
Cranford, J. Frank, Gastonia, N. C.	Oct. 10, 1946
Brantley, John Q., Atlanta, Ga.	Nov. 21, 1947
Elliott, Loren F., Albuquerque, N. Mex.	Dec. 12, 1949
Gammage, Frederick V., Grundy, Va.	Aug. 21, 1950
Williams, Jack K., Salisbury, Md.	July 27, 1953
Hatchett, William C., Hollywood	Oct. 26, 1953

STATE NEWS ITEMS

Mr. John Bach, director of press relations for the American Medical Association, was in Florida Nov. 13-19, 1953, for two scheduled addresses and a series of meetings with officers of various county medical societies.

Mr. Bach was the principal speaker on November 14 in Jacksonville at a meeting sponsored by the Florida Medical Association for the purpose of drafting a Code of Cooperation between physicians-hospitals and the press-radio-television. Following this meeting he consulted with the staff of the Association in the executive offices.

On November 17, he met with Drs. Morris B. Seltzer, president, and C. Robert DeArmas, chairman of the Committee on Public Relations, of the Volusia County Medical Society in Daytona Beach. In Orlando the following day, Mr. Bach discussed press relations with the Committee on Public Relations of the Orange County Medical Society and was principal speaker at a dinner meeting of the Society to which representatives of the press, radio and television were invited. Also present were officers of surrounding county medical societies.

While in Florida, Mr. Bach discussed press relations with Drs. Frederick K. Herpel, Association president, Duncan T. McEwan, president-elect, and Edward Jelks, liaison for public relations on the Board of Governors.

Dr. Louis M. Orr of Orlando, Chairman of the A.M.A. Committee on Federal Medical Services, presided at an A.M.A. sponsored regional conference in Atlanta on November 8. Non-service-connected disabilities in medical care for veterans was the topic discussed at the meeting.

Members of the Florida Medical Association in attendance were President Frederick K. Herpel, West Palm Beach; Dr. Frederick H. Bowen, Chairman of the Sub-Committee to the Board of Governors on Veterans Care, and Dr. George M. Stubbs, member of the Sub-Committee, both of Jacksonville; Dr. Reuben B. Chrisman Jr. of Miami, delegate to the A.M.A.; and Drs. James L. Bradley, Fort Myers; Norval M. Marr and Alvin L. Mills, St. Petersburg. Harold Parham represented the executive office.

Dr. Bernard L. N. Morgan of Jacksonville attended the meeting of the British Association of Plastic Surgeons in England in September. Dr. Morgan has been elected as a member of the Association.

Dr. Harold Rand of Miami has returned to his practice after attending a seminar on cardiovascular diseases in New York City under the auspices of the American College of Physicians.

Dr. DeWitt C. Daughtry of Miami, president of the South Florida Alumni Chapter of Alpha Kappa Kappa medical fraternity, took part in the installation of the first chapter of the fraternity to be installed in Florida. The new chapter was installed at the University of Miami.

The Midwinter Convention of the Florida Society of Ophthalmology and Otolaryngology will be held at the Sans Souci Hotel in Miami Beach on Wednesday, Jan. 20, 1954. The guest speakers for the afternoon scientific session will be Dr. Howard P. House of Los Angeles and Dr. William C. Owens of Baltimore. At 8 p.m. there will be the usual informal banquet. This meeting is held each year concurrently with the annual Midwinter Seminar of the Graduate School of Medicine of the University of Florida. Physicians attending the Seminar are invited to attend the Convention, and all Seminar registrants and their wives may attend the banquet.

For the eighth consecutive year the University of Florida Midwinter Seminar in Ophthalmology and Otolaryngology will convene in Miami Beach on Monday, Jan. 18, 1954, and will continue throughout the week. A faculty of wide renown will present lectures in Ophthalmology on January 18, 19 and 20 and in Otolaryngology on January 21, 22 and 23.

Dr. Sherman B. Forbes of Tampa made a flying trip to San Francisco recently to observe goniotomy procedures at the invitation of Dr. Otto Barkan.

Dr. Rex B. Perkins of Winston-Salem, N. C. entered medical service with the U. S. Army on Aug. 1, 1952. He holds the rank of captain.

Dr. George F. Schmitt Jr. of Miami spoke at recent meetings of the North Shore Kiwanis Club and the North Shore Lions' Club.

Dr. Frank G. Slaughter of Jacksonville spoke at the District 6 meeting of Blue Cross - Blue Shield at The Inn, Ponte Vedra, Thursday, November 19 on "Destiny and Disease." District 6 includes the states of Louisiana, Mississippi, Alabama, Georgia, Florida and Tennessee.

Drs. Bernard L. N. Morgan, Gordon F. King and Francis A. Copp of Jacksonville attended a postgraduate course at the University of Illinois Cleft Palate Center recently. Their attendance was sponsored by the Crippled Children's Commission.

Dr. Walter C. Payne of Pensacola spoke to the Florida A and M University Hospital Medical Staff on "Professional Relationships in Modern Hospitals" in Tallahassee on November 17. The meeting was attended by the joint staffs of the Forsyth Memorial, W. T. Edwards and Tallahassee Memorial Hospitals.

Dr. Ashbel C. Williams of Jacksonville was principal speaker at the first in a series of area meetings on cancer education for women, sponsored by the Duval County unit of the American Cancer Society. The meeting was held at the Southside Grammar School on November 16.

Mr. Harry E. Simmons, executive director of the Florida Council for the Blind, has asked The Journal to help dispel false rumors that cellophane strips from cigarette packages can be used to obtain a Seeing Eye Dog for a blind person. Simmons said that this information is a rumor only, and for some reason it is revived from time to time. The Seeing Eye, Inc., is an organization in Morristown, N. J., which trains guide dogs for blind people, and cellophane strips have nothing to do with the furnishing of dogs and other considerations.

It was stated that any blind person between the ages of 16 and 55 who wants a Seeing Eye Dog should communicate directly with the Seeing Eye, Morristown, N. J. His eligibility will be established promptly and information given on procedure.

Dr. Graham W. King Jr. of Delray Beach took part in a question and answer session at a meeting of the Palm Beach County Heart Association in November.

Dr. John R. Butter of St. Petersburg spoke at a meeting of the Clearwater Rotary Club in November.

Dr. Michael A. DiCosola of Sarasota addressed Civil Defense first aid classes on November 24 on emergency handling of bone fractures.

Dr. Bernard M. Barrett of Pensacola was honored by the Civitan Club of that city at a recent meeting. He was given a standing vote of thanks and awarded a certificate for his efforts and cooperation in the Civitan tonsillectomy program.

Dr. Herschel G. Cole of Tampa, president of the Florida Orthopedic Society, presided over the mid-year meeting of the Society in Tampa, November 7 and 8.

Dr. George L. Rand of Miami Beach has been promoted to the rank of colonel in the Medical Corps of the U. S. Army Reserve.

Dr. John H. Mitchell of Jacksonville has been re-elected vice president of the Baptist Home for Children of North Florida.

Dr. Karl B. Hanson of Jacksonville spoke on "Heart Disease and Vocational Rehabilitation" before the National Vocational Rehabilitation Association in Miami in October.

Dr. William E. Kendall of St. Petersburg attended the scientific session of the Association of Military Surgeons in Washington in November.

Dr. Duncan T. McEwan of Orlando spoke at the annual meeting of the officers and committee chairmen of the Woman's Auxiliary to the Florida Medical Association in Orlando in November.

Drs. Francis D. Pierce, Thomas L. Roberts Jr. and Scottie J. Wilson of Fort Lauderdale appeared on a half-hour public service seminar on WFTL-TV in conjunction with National Diabetes Week, Nov. 15-21, 1953.

Dr. Roger E. Phillips of Orlando was principal speaker at the annual banquet of Division 2 of the Licensed Practical Nurses Association of Florida on November 17.

Dr. Raney A. Oven of Tallahassee spoke at the Conference of Florida Children's Commission meeting in St. Petersburg.

Dr. James L. Borland of Jacksonville was guest speaker at the meeting in St. Luke's Hospital of the Northeast Chapter of the Florida Society of Medical Technologists on November 10.

Dr. Mason Romaine III of Jacksonville attended several clinics at Grady Hospital in Atlanta in October.

Dr. Nelson A. Murray of Jacksonville attended the annual sessions of the College of American Pathologists and the American Society of Clinical Pathologists in Chicago in October.

Dr. Richard G. Skinner Jr. of Jacksonville attended the annual Conference on Services to Handicapped Children in St. Petersburg in November.

Dr. Hugh A. Carithers of Jacksonville attended the annual meeting of the Florida Children's Commission in St. Petersburg in November.

Dr. Frank G. Slaughter of Jacksonville spoke on "Music and Medicine in History" at the November meeting of the Music Teachers' Association of Jacksonville.

Drs. Sullivan G. Bedell and Nathan Weil Jr. of Jacksonville took part in a conference on retarded children sponsored by the North Florida Association for Retarded Children in November.

Dr. Ralph S. Sappenfield of Miami was elected vice speaker of the American Association of Anesthesiologists at the annual meeting in Seattle in October.

Dr. George W. Robertson III of Miami has returned to his practice following a three months teaching Fellowship at the Tulane University School of Medicine in New Orleans.

Drs. W. Tracy Haverfield and Parke G. Smith, both of Miami, gave a paper on "Arterial Visualization of the Brain and Kidney" at the Fort Clayton General Hospital in Panama in October.

Dr. Robert G. Nelson of Tampa has taken office as president of the South Atlantic Association for 1954.

Dr. Paul W. Hughes of Fort Lauderdale spoke at a luncheon meeting of the Sinawik Club in Hollywood in November.

Dr. James M. San of Tampa took part in a panel discussion on the feeding habits of children at the Guidance Center of Hillsborough County in November.

Dr. Roger E. Phillips of Orlando spoke on the state facilities for prevention and cure of mental illness at a meeting of the Central Florida Mental Health Association in November.

Dr. Charles W. Duval of Pensacola was the guest of honor on November 19 at a party given by local doctors at the Pensacola Country Club. Dr. Duval is retiring as pathologist at the Sacred Heart Hospital.

Dr. Wm. E. Van Landingham of West Palm Beach spoke on "County Welfare of the Palm Beaches" at a meeting of the Property Owners Managers Association of the Palm Beaches on November 19.

Dr. Efton J. Thomas of Miami Beach attended the annual meeting of the Interstate Postgraduate Assembly in Chicago, November 2-5.

Dr. Turner Z. Cason of Jacksonville spoke on "Cardiovascular Disease: Causes and Treatment" at the weekly luncheon meeting of the Jacksonville Junior Chamber of Commerce on November 10.

Dr. James R. Nieder of Delray Beach spoke on cataracts at a meeting of the American Association of University Women of Delray Beach in October.

Dr. Paul Kells of Miami spoke on "Sleeping Pills — Are They Good or Bad?" before the Miami Civitan Club in November.

Dr. Jere W. Annis of Lakeland served as a member of the editorial board which collaborated in production of a "Book of Health," a medical encyclopedia compiled for public use.

The new South Dade High School building in Homestead was dedicated on November 15 to the late Dr. John B. Tower, pioneer physician of the area. Dr. Tower, who died in 1939, was a member of the Florida Medical Association.

Dr. Richard G. Skinner Jr. of Jacksonville represented the Florida Medical Association at a meeting of the Florida Campaign Committee in connection with the March of Dimes program. The meeting was held in Jacksonville on December 4.

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COMPONENT SOCIETY NOTES

Bay

The Bay County Medical Society added a transcribed radio program to its public relations activities the latter part of November, according to announcement by Dr. William C. Roberts, Panama City, chairman of the Society's Committee on Public Relations. Cooperating with station WDLP in Panama City, the Society is presenting medicine in its relationship to the various sports. The program is being broadcast in connection with a locally produced high school show.

Broward

The Broward County Medical Association met in Hollywood on November 24. Heretofore all meetings have been held in Fort Lauderdale, but under the new system which has just been put into effect, frequent sessions will be held in Hollywood.

Dade

Senator George Smathers was guest speaker at the regular monthly meeting of the Dade County Medical Association on December 1.

(Continued on page 502)

The Problem of Nausea and Vomiting:

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Whenever nausea, vomiting and vertigo are disturbing and complicating factors, Dramamine may be used with confidence.

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The usual dose for motion sickness is 50 mg. (one tablet) taken one-half hour before departure and, if necessary, before meals for the duration of the journey. Control of nausea and vomiting of other conditions and severe motion sickness is achieved, with minimal drowsiness, by a dosage of 100 mg. every four hours.

"[Dramamine] is administered orally or rectally. . . . The same doses may be administered rectally by insertion of the tablet or other suitable form. . . ."[2]

Dramamine Liquid is particularly useful for children.

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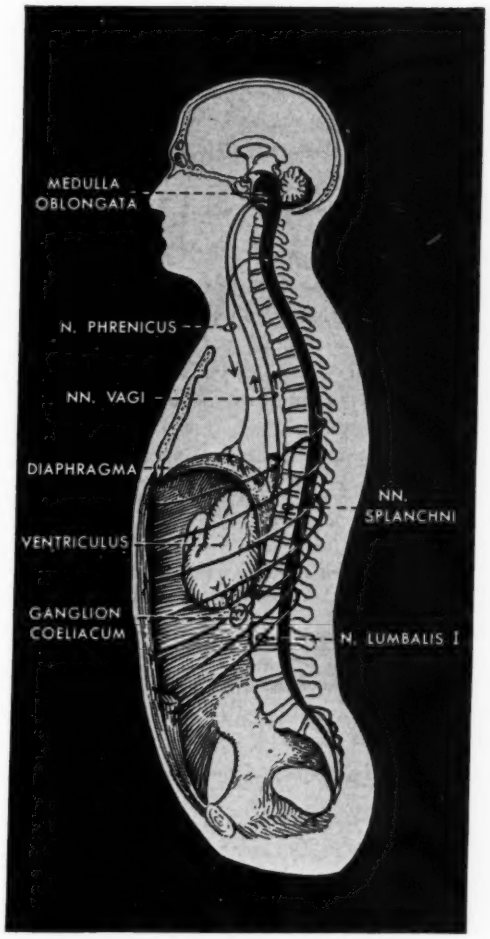
1. Keats, S.: Ataxić Cerebral Palsy with Akinetic Seizures: Dramatic Response to Dramamine, J. M. Soc. New Jersey *50*:53 (Feb.) 1953.

2. Council on Pharmacy and Chemistry: New and Nonofficial Remedies. 1953. Philadelphia, J. B. Lippincott Company, 1953, p. 471.



THE VOMITING REFLEX: *Vagus→ nodose ganglion→ solitary tract→ spinal cord→ cervical, thoracic and lumbar nerves to diaphragm, cardiac sphincter, stomach, abdominal and pelvic musculature. (After Krieg, W. J. S.: Functional Neuroanatomy, ed. 2, New York, The Blakiston Company, Inc., 1953, p. 104.)*

SEARLE *Research in the Service of Medicine*

(Continued from page 500)

Duval

The regular meeting of the Duval County Medical Society was held on December 1.

The Centennial Anniversary Banquet of the Society was held on December 16 at 7:00 p.m. at the Ballroom of the George Washington Hotel in Jacksonville. Speaker was U. S. Senator George Smathers. More details of the Centennial Celebration may be found on page 337 of the November 1953 Journal.

Hillsborough

The regular monthly meeting of the Hillsborough County Medical Association was held on December 1 at the Floridan Hotel in Tampa.

Lake

Officers of the Lake County Medical Society were among the guests of the Orange County Medical Society at a meeting in Orlando on November 18. At this time, Mr. John Bach of Chicago, A.M.A. director of press relations, gave a talk on public relations.

At the regular November meeting of the Society, Dr. Lincoln P. Elam Jr. of Wildwood was a guest.

Monroe

At the regular November meeting of the Monroe County Medical Society, Dr. Ramsey MacCordy, anesthesiologist at the U. S. Naval Hospital in Key West, lectured on recent advances and newer technics in anesthesia. A roundtable discussion followed the talk.

Orange

Mr. John Bach, director of press relations of the A.M.A., was principal speaker at a dinner meeting of the Orange County Medical Society on November 18. Representatives of the press, radio and television were invited as well as officers of the surrounding county medical societies.

Pinellas

The regular meeting of the Pinellas County Medical Society was held on December 7. Speaker of the evening was the Honorable Courtney Campbell, U. S. Representative from that district.

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OBITUARIES

Thaddeus Hall Green

Dr. Thaddeus Hall Green of St. Petersburg died suddenly at his home on Sept. 16, 1953, from a heart ailment. He was 62 years of age.

A Floridian, Dr. Green was born in Dellwood on Sept. 25, 1890. He received his medical training at Emory University School of Medicine, where he was graduated in 1914. He was licensed in Florida that same year and located in St. Peterburg in 1916.

For 35 years Dr. Green engaged in the general practice of medicine in St. Petersburg. He was a member of the medical staff of Mound Park Hospital. He held membership in the Four Square Church and was a Mason.

Since 1916 Dr. Green had been a member of the Pinellas County Medical Society, and also of the Florida Medical Association, in which he had been a life member for three years. He was also a member of the American Medical Association.

Survivors include the widow, Mrs. Ruth Green of St. Petersburg; one daughter, Mrs. Betty Nelson of Miami; a stepson, Harold Massey of St. Petersburg; two brothers, David Green of St. Petersburg and Corey Green of Bascom; and two sisters, Mrs. Priscilla Kirkland and Mrs. Frank Conrad, both of Tallahassee.

Arthur Patchen MacVeany

Dr. Arthur Patchen MacVeany of Miami died unexpectedly at his home on Sept. 22, 1953. He was 57 years of age.

A graduate of Columbia University College of Physicians and Surgeons in 1927, Dr. MacVeany spent the first 10 years of his professional career in general practice in New York City. In 1937 he limited his practice to obstetrics and gynecology.

In June 1944 he came to Florida from Forest Hills, Long Island, New York, and engaged in the practice of his specialty in Miami. He soon became one of that city's outstanding obstetricians and served on the staffs of the leading hospitals. His untiring efforts in behalf of Mercy Hospital were a major factor in its building and maintenance. Locally, he was a member of SS. Peter and

Advertisement

From where I sit *by* Joe Marsh

A Case of "Moostaken" Identity

Slim Smith never had a chance to use his moose call until a trip north this year. Visited him yesterday to see what he'd bagged.

"First day out," he told me, "I picked up a trail. I sounded the call and waited. Then I heard a moose call. Sure enough, something came crashing through the brush. But it was another guy with his moose call. Boy, did I get my finger off the trigger in a hurry!"

My last day there I picked up another trail. And this time I got me a real moose. But you can bet your bottom dollar I took a good look before I did any shooting!"

From where I sit, we could all learn a little from Slim's experience. Most of us are guilty sometime or other of being too quick on the trigger. Like the fellow who would tell me how to practice my profession . . . or even deny me an occasional glass of beer with my dinner. I say that kind of "aim" is way off!

Joe Marsh

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Paul parish, and was a charter member of the Emerald Society, for persons of Irish ancestry.

Since 1945 Dr. MacVeany had been a member of the Dade County Medical Association and of the Florida Medical Association. He was also a member of the American Medical Association and other professional societies.

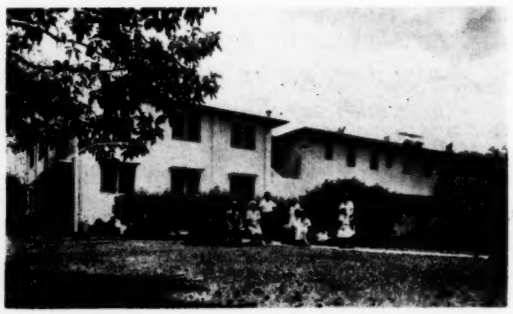
Surviving are the widow, and seven daughters, Genevieve, recently graduated from the nursing school of the Columbia Medical Center in New York City; Eileen and Sheila, student nurses at New York's Presbyterian Hospital, which is affiliated with their father's alma mater; and Marcia, Carro, Victoria and Anne Marie, all of Miami.

Alpheus Cary Koon

Dr. Alpheus Cary Koon of Lakeland died in Morrell Memorial Hospital in that city on Sept. 19, 1953. He was 63 years of age.

A native Floridian, Dr. Koon was born at Lake City on July 8, 1890. He was the son of Wiley Koon, a pioneer citizen of Suwannee County. A graduate of the old Columbia College at Lake City in 1911, he received his medical education at the Lincoln Memorial University Medical Department in Knoxville, Tenn., where he was awarded the degree of Doctor of Medicine in 1914. His hospital affiliations were St. Joseph's Hospital in Memphis, Tenn., City Hospital in St. Louis, Mo., and Morrell Memorial Hospital in Lakeland.

After receiving his license in Florida in 1917, Dr. Koon practiced in Branford for a short time before locating in Lakeland, where he engaged in the practice of medicine for 29 years. Locally, he was a member of the Presbyterian Church and of the Masonic Order.



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Dr. Koon became a member of the Polk County Medical Society in 1925, and also became affiliated with the Florida Medical Association and the American Medical Association at that time.

Surviving are the widow, Mrs. Gennie C. Koon; three sons, Alpheus C., Louis and Wiley E.; one daughter, Mrs. Eugene Allard of Salem, N. H.; three brothers, J. E. Koon of Titusville, Hugh W. Koon of St. Petersburg, and Alexander Koon of San Antonio, Texas; and one sister, Mrs. Addie Blanton of Tampa.

Helen Irene Grove Leone

Dr. Helen Irene Grove Leone of Largo died in Tallahassee on Sept. 30, 1953. Interment took place in Bayard, Iowa.

A native of Iowa, Dr. Leone was born in Guthrie Center on June 30, 1911. For a number of years she resided in St. Paul, Minn. She received her premedical training at the University of Chicago and was awarded the Bachelor of Science degree by that institution. She then attended the University of Illinois College of Medicine, where she received the degree of Doctor of Medicine in 1949. She served an internship at Grant Hospital in Chicago.

In 1950 Dr. Leone was licensed to practice medicine in Florida. In September of that year she and her husband, Dr. William A. Leone, located in Largo and since that time had engaged in the general practice of medicine there.

A member of the Pinellas County Medical Society, Dr. Leone was also a member of the Florida Medical Association and the American Medical Association. At the time of her death, she was en route to Chicago to attend an obstetric conference.

In addition to her husband, survivors include three sisters.

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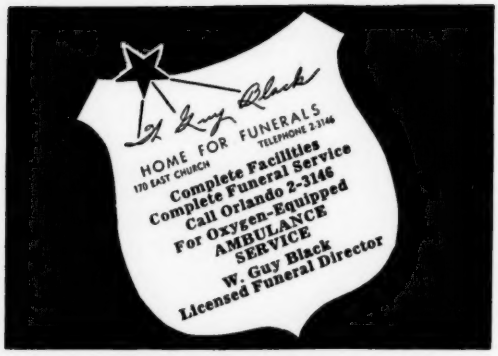

BOOKS RECEIVED

The Epidemiology of Health. By Iago Galdston, M.D., Editor. Pp. 197. Price, $4. New York, Health Education Council, 1953.

This New York Academy of Medicine Book owes its title to its editor, Dr. Galdston, who describes it as "a most felicitous conjunction of terms — epidemiology and health, descriptive of precisely the very core and essence of social medicine." Although based on the Eleventh Annual Eastern States Health Education Conference, it goes far beyond the material presented at that time in crystallizing a well rounded concept of the new epidemiology of health.

In the 15 illuminating chapters, distinguished contributors demonstrate that health can be propagated. Epidemiology has long carried the connation of mass disease, but this book clearly presents the concept of the healthy mass. Moreover, it offers practical suggestions on how the objective of health in the mass can be effectively achieved. The reader finds that an epidemiology of health is already pursued in the United States Army and, to a lesser extent, in American industry. Too, the epidemiology of health has the promise of extending rapidly into the areas of individual and community health through behavior-centered health education. Here is convincing evidence that the application of this concept in clinical medicine, in public health and in health education must yield effective results.

Transactions of the American College of Cardiology. By Bruno Kisch, M.D., Editor. Pp. 252. Price, $5. New York, American College of Cardiology, 1953.

Designated Vol. II — 1952, this publication contains the transactions of the first annual meeting of the American College of Cardiology, held in New York on June 6 and 7, 1952. On that occasion the papers presented by distinguished cardiologists were on the subject of treatment of the patient with cardiac disease. Also included are the proceedings of the fall meeting held at Yale University School of Medicine on November 7 and 8, 1952. The general topic at that time was "Graphic Registrations in Cardiology."

The book contains a roster of the officers and of the more than 800 members from all over the Americas.

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An Inventory of Social and Economic Research in Health. Pp. 180. Health Information Foundation, New York, 1953.

This 1953 edition of the Inventory is the second, and like the first edition appearing in 1952, is a compilation of some 250 current and recently completed research projects dealing largely with the social and economic aspects of health programs and health problems. In view of the current increasing interest in the social and economic aspects of health programs and health problems, this publication is especially useful and valuable to the ever-growing number of students in this field.

Bound together by the common thread of health problems and the social context in which they arise, the three broad areas covered are (1) disease and its correlates, (2) health economics and problems of administration, and (3) community organization and social structure. Brief abstracts of projects being conducted by national foundations, college and university research groups, governmental agencies and voluntary health organizations give the reader some indication of the major areas in which the need for objective information has led to the formulation of concrete research proposals.

The Inventory is released by the Health Information Foundation, which is sponsored by the drug, pharmaceutical, chemical and allied industries. Its president is Admiral W. H. P. Blandy, USN (Ret.), and the chairman of its Citizens Advisory Committee is The Honorable Herbert Hoover. The Foundation maintains headquarters at 420 Lexington Ave., New York 17, N. Y.

Respiratory Diseases and Allergy, New Method of Approach. By Josef S. Smul, M.D. Pp. 80. Price, $2.75. New York, Medical Library Company, 1953.

In this little book the author discusses the successful treatment of respiratory diseases and allergy by a new method. Out of his many years of experience in the field of respiratory ailments he offers simple solutions to many complex respiratory problems, stating the purposes of this book as:

(1) To show the etiology of about twenty-odd syndromes which now are described in all standard text books as separate "diseases" of the respiratory tract with doubtful or confusing causes; (2) to provide proof that all these twenty-odd separately described "diseases" are only different groups of symptoms of one disease, allergy of the respiratory tract; (3) to demonstrate a method of preventing and neutralizing the evil effects of this disease, as a result of having proven the cause and supplied the remedy; (4) to reveal the discovery of a method which obviates the customary routine of testing each patient for each allergic substance by avoiding easily eliminable offenders and, if necessary, further to treat him with just a few universal respiratory desensitizers; (5) to indicate a method which discards all local treatment, whether tampons, sprays, washing or drops, in the management of this disease, in which they are so extensively and harmfully used; and (6) to reduce confusion on the subject and relieve the physician of the burden of attempting to diagnose and treat twenty-odd imaginary diseases of the respiratory tract instead of one definite disease.

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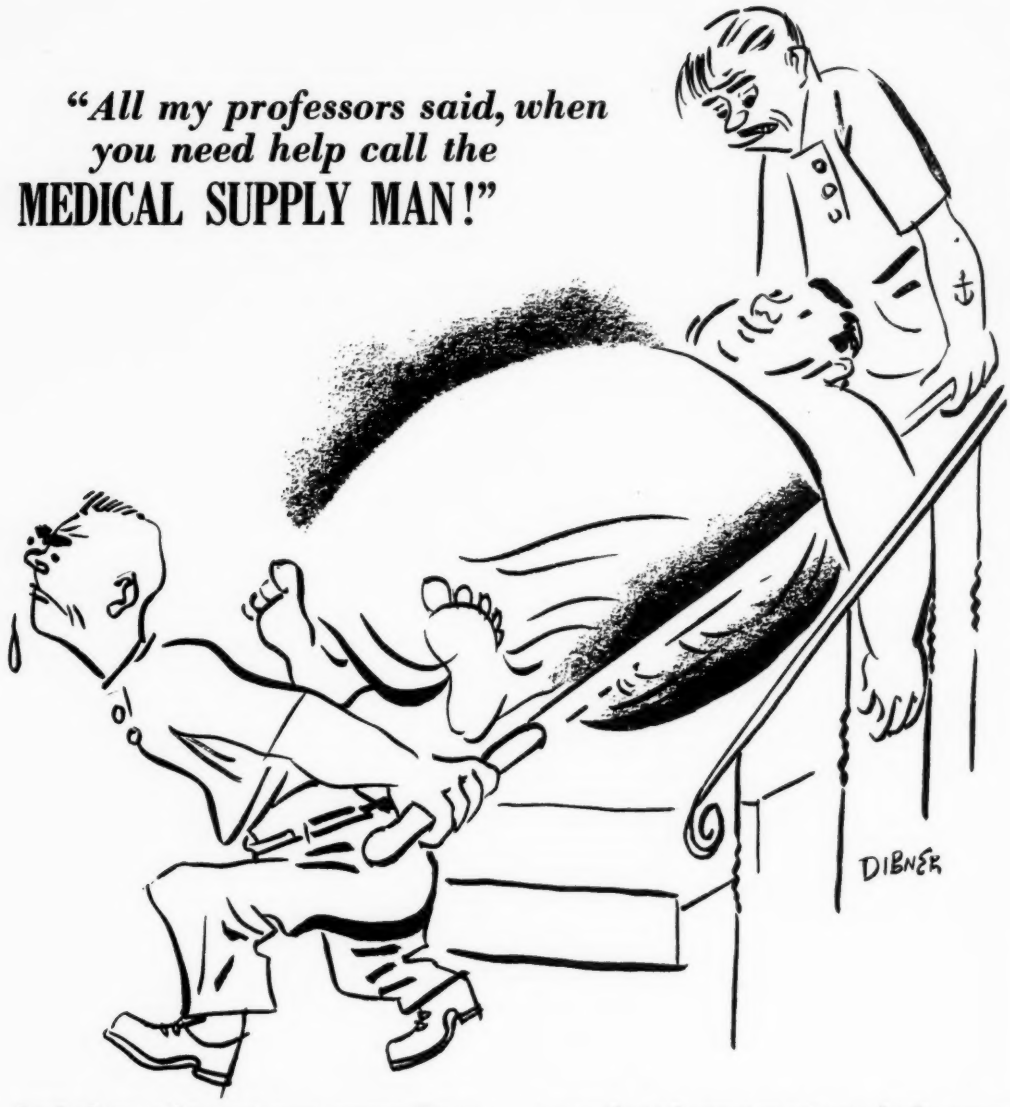

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